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PROCEEDINGS

OF THE

AMERICAN SOCIETY

OF

CIVIL ENGINEERS

VOL. XLVI—No. 3

March, 1920

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AMERICAN SOCIETY OF CIVIL ENGINEERS

INSTITUTED 1852

PROCEEDINGS

This Society is not responsible for any statement made or opinion expressed in its publications.

SOCIETY AFFAIRS

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MINUTES OF MEETINGS OF THE SOCIETY

February 18th, 1920.—The meeting was called to order at 8.30 P. M.; President Arthur P. Davis in the chair; Herbert S. Crocker, Vice-President, acting as Secretary; and present, also, 226 members and guests.

The President announced an address by M. O. Leighton, M. Am. Soc. C. E., to be delivered the following evening in the Auditorium of the Engineering Societies Building on the subject "The Engineer as a Citizen—Are You a Real Citizen, or Do You Just Live Here?"

The speaker of the evening, Thomas C. Desmond, Assoc. M. Am. Soc. C. E., was introduced by President Davis, and addressed the meeting informally on the subject "Human Elements in Modern Industrial Management."* The talk was illustrated by many views of the work done at the Newburgh Shipyards, Inc., of which Mr. Desmond is President. Evidence of the great interest aroused in the address, was shown

* See page 328.

by the many questions asked at its conclusion, giving Mr. Desmond further opportunity to explain fully the details of the radical methods adopted in his management of the labor situation at the Newburgh Yards.

The Secretary announced the following deaths:

THEODORE BOYDEN FORD, of Bridgeport, Conn., elected Member, December 6th, 1905; died February 2d, 1920.

GEORGE SULLIVAN MORRILL, of Penacook, N. H., elected Member, March 2d, 1887; died February 9th, 1920.

ROBERT WINTHROP PRATT, of Cleveland, Ohio, elected Member, June 6th, 1911; died February 2d, 1920.

EDWIN FOSTER SMITH, of Philadelphia, Pa., elected Member, June 5th, 1895; died January 26th, 1920.

WILLIS BENTON WRIGHT, of New Orleans, La., elected Member, November 3d, 1897; died November 16th, 1919.

RAY ROLPH PALMER, of Eagle Rock, Cal., elected Associate Member, October 10th, 1916; died December 25th, 1919.

Adjourned.

March 3d, 1920.—The meeting was called to order at 8.30 P. M.; Vice-President Herbert S. Crocker in the chair and acting as Secretary; and present, also, 169 members and guests.

In the absence of the author, a paper by Frank G. Jonah, M. Am. Soc. C. E., formerly Lt.-Colonel, Engineers, U. S. A., entitled "The 'Light Railways' of the Battle Front in France", was read by J. P. J. Williams, Assoc. M. Am. Soc. C. E. The subject was discussed by H. F. Dunham, M. Am. Soc C. E., who illustrated his remarks by motion pictures, and Messrs. F. W. Perry, F. A. Molitor, T. Kennard Thomson, F. A. Snyder, M. E. Pumphrey, H. L. Hoyt, C. Raymond Hulsart, and W. B. Poland.

Written discussions were received from Messrs. William Wren Hay, F. W. Green, W. J. Wilgus, and Maj.-Gen. William M. Black, U. S. A. (*Retired*), but, on account of the lateness of the hour, were not read.

The Chairman announced the following deaths:

CHARLES EMERSON GREGORY, of East Orange, N. J., elected Junior, October 6th, 1896; Associate Member, March 6th, 1901; Member, June 19th, 1918; died February 21st, 1920.

THOMAS HOOKER LOOMIS, of Steubenville, Ohio, elected Member, January 7th, 1903; died February 11th, 1920.

ALEXANDER MCCLURE LUPFER, of Portland, Ore., elected Member, November 1st, 1905; died February 3d, 1920.

SAMUEL CLARENCE THOMPSON, of New York City, elected Member, February 6th, 1889; died February 28th, 1920.

Adjourned.

OF THE BOARD OF DIRECTION

(Abstract)

March 9th, 1920.—The Board met at 11 P. M., immediately after the adjournment of the Membership Committee; President Davis in the chair; H. S. Crocker, Acting Secretary; and present, also, Messrs. Clark, Elwell, Greene, Hudson, Ketchum, Langthorn, Pegram, Tuttle, and Wagner.

Ballots for membership were canvassed resulting in the election of 17 Members, 55 Associate Members, 1 Associate, and 12 Juniors, and the transfer of 12 Juniors to the grade of Associate Member.

One Associate was transferred to the grade of Associate Member, and 24 Associate Members were transferred to the grade of Member.

A report from the Membership Committee was received and acted upon.

Adjourned.

HUMAN ELEMENTS IN MODERN INDUSTRIAL MANAGEMENT

ADDRESS BY THOMAS C. DESMOND, ASSOC. M. AM. SOC. C. E.,
AT THE MEETING OF THE SOCIETY, FEBRUARY 18TH, 1920.

The following abstract of the informal address by Thomas C. Desmond, Assoc. M. Am. Soc. C. E., presented at the New York Meeting of the Society on February 18th, 1920, includes the points emphasized by the speaker in describing the methods used in the Newburgh Shipyards, Inc., of which he is President. This yard is located on the Hudson River about 60 miles above New York City, at a site particularly selected because of its beautiful view of Storm King Mountain, in the belief that attractive surroundings help to maintain a higher standard of personnel among the workers.

The shipyard is run as a truly open shop; a number of men belong to the union, but this is a matter of indifference to the management. If a union delegate wishes to talk over any grievance he is received with exactly the same consideration as any other worker, and no effort is made to discourage men from joining the union. The right of the men to bargain collectively was recognized from the beginning.

With the feeling that the 3 300 workers should act as one big union, a system of shop committees was adopted, three men from each trade being elected by the workers. This Shop Committee in turn elects an Executive Committee, with a Chairman and Secretary. It is a real functioning body, and representative along the lines of the best principles of democratic government. Up through that body come grievances of all kinds, many of which are there negotiated. Wages, conditions of labor, hours of employment, are considered. It is a system of collective bargaining. The men elect their representatives for six months, and it has worked out well. Many ideas come from that Shop Committee, and no man can truthfully say that he does not have any chance to get any ideas he may have straight up to the management.

The constant effort is to promote understanding between the workers and the management. The human problems which had to be faced were really more important than the technical problems. Starting at shipbuilding overnight, as it were, it was necessary to build up a war-time organization of 400 men when shipyards all over the country were confronted with the same problem of finding skilled workers. Before the war there were about 50 000 men working in American shipyards, and that force had to be expanded to 450 000 men—really some human problem.

Shipbuilding is a highly technical business, including many trades quite difficult for a man to pick up. It was first necessary to obtain a nucleus of competent men from other yards, 200 or 300 men, a num-

ber of them English or Scotch who had been thoroughly trained in the shipyards of England or Scotland. It was quite a problem to adjust the temperaments of those Englishmen and Scotchmen to American labor. It was recognized at once that it was necessary to cultivate good feeling, so a series of dinner parties and social occasions were arranged to bring the men together and a large part of the time of the higher executives was occupied bringing the foremen and superintendents into harmonious relationship and teamwork with each other, as well as with the workers. Picnics, local excursions, clambakes, etc., were effective in bringing the men together socially.

From the first, schools were conducted in the shipyard, and also night schools in Newburgh. Many Italians, Poles and Hungarians taken from New York construction work or from the West would work all day at the yard, and then go to school at night to learn the shipbuilding trades, where they were taught caulking, riveting, etc. After the work of ship construction had been started, one of the four ways was deliberately set aside for use as an experimental school, and every man who came into the yard had to go to the school ship before he was allowed to work with a regular gang.

It was necessary, therefore, to have foremen for the school ship who had teaching ability as well as sympathy with the men. To develop this teaching ability a course was given on how to teach, and thus a corps of about fifteen instructors was developed which inculcated a great spirit of helpfulness in the yard. This seemed like an obvious necessity in order to train new men and help to expand 50 000 skilled workers into the 450 000 required. Yet this schooling system was not applied generally elsewhere for some time. Its use made unnecessary the too common practice of stealing men from other shipyards. The men gained self-respect, and the ambition to go on and do things. They became mechanics instead of laborers.

Men who had never been inside a shipyard, such as farm-hands or grocery store clerks were trained as first-class riveters; in fact it was found that better results were obtained by training green men thoroughly than by taking on structural steel workers who were not familiar with the kind of water-tight riveting necessary in ship construction. The men are paid while they are learning.

Classes in English and American history were attended three nights per week, and much enthusiasm was manifested. About six months after these courses had been organized, it was announced that no orders whatever should be given in the yard in any language but English. Six months ago a rule was made that after three months no man would be allowed to work in the yard who was not an American citizen or who had not at least taken out his first papers. There is not a man on the pay-roll to-day who is not an American citizen or on the way to become one.

As an illustration of the spirit in the yard, the management during the recent epidemic of influenza was able to enforce an order that every man should have his nose sprayed daily with argerol. This is not only humanitarian, but it is also good business to keep the men well and not have them absent, breaking up gangs and stopping production. These little things help greatly. The men are contented and happy. The happier they are in their work, the better they like it, and the less is the labor turnover. It is estimated that it costs $50 every time a man is hired and fired in the Newburgh shipyard, and this is probably a conservative estimate.

The labor turnover, sometimes as high as 200% in some industries, has been kept very low by these methods and by furnishing opportunities for self-expression. Because the efficiency of modern industry very largely depends upon high production and specialization, the work is exceedingly monotonous, and the need for some outlets to develop self-respect is very great. At Newburgh, there has been encouraged, as a means to that end, the formation of different athletic teams, a band, social clubs, dances and picnics, always managed exclusively by the men.

The latter point is of great importance. Many industries have a so-called welfare director whose job it is to go out and promote good feeling and arrange these affairs. It is always harmful. Men do not want charity. They do not want their employers to interfere with their lives. They do not want to feel coddled. Particular care is taken therefore that no one actively connected with the management shall have anything to do with the control of these outside activities. No support, financially or otherwise, is given from "higher up".

There should be in every big industry something of what might be called a college spirit. The by-products of college life such as athletics and other outside activities are a great stimulus to enthusiasm and the right spirit. This same spirit can be developed in industries if the men are allowed to run things themselves. For example, when the baseball team wanted a ball park they themselves went out and borrowed $6 000 on a joint note, bought the lumber, and on their own time, with their friends, put up a grand stand, bleachers and fence, also graded and completed an excellent diamond. They run their own games and have in one season wiped out one-third of the debt.

In order to develop the democratic spirit in the industry, to introduce the human element and keep in sympathy with the men, one method used is Tuesday afternoon meetings of the officials with all the foremen and superintendents. The affairs of the Company are discussed freely; if a foreman has a criticism of some other foreman he is supposed to make it in open meeting, where he can be answered and the criticism defended. No "knocking" outside of these conferences is allowed. This has been found surprisingly effective in preventing the little cliques

and jealousies often found in large organizations. In addition, many excellent ideas come from these Tuesday conferences. The officials of the company become well known to the foremen and superintendents —a very great advantage, as these men form the link between the management and the workers.

The officials also go out among the men and make short addresses on such subjects as "How American Can Compete with English Shipyards", "Problems of Management", "Getting New Orders", etc., either at the lunch hour or at evening gatherings. Most trouble comes from lack of understanding and lack of acquaintance, and activities of the Shop Committee such as running Liberty Bond campaigns help greatly. While the principal duty of shop committees is to adjust serious grievances these come only once a year or so, and it is best to furnish other activities to keep them functioning.

On account of the housing shortage in Newburgh, the Company built 200 model houses, financed by borrowing money from the Government on mortgage. These houses are rented to both shipyard workers and outsiders, and a regular community club controls all the activities, the people taking turns watching the children at a common playground, etc., co-operating for their own happiness. In order to set a good standard of taste, one of the houses was completely furnished as a model, the department stores doing this gratis.

Thus, while using technical ingenuity to improve methods of production, and to raise the standard of construction as high as possible, according to the principles of sound engineering practice, at the same time endeavor is made never to forget that, after all, the human elements of production are far more important than the materials produced. Every line of industrial management might well remember that the humblest workman can have the same reactions as the rest of us to the principles of love and loyalty and human understanding.

In response to questions from the floor, Mr. Desmond elaborated some of the details of the work at Newburgh as follows: The 200 homes were built by a separate concern, the Newburgh Housing Corporation, the directors being business men of the town, dividends being limited to 5%, making rents about 25% lower than in the town; the homes cost about $5 000 apiece (single houses). There is no finer form of profit-sharing than piece work, but the rate once fixed for a given operation must never be lowered—the basis of payment must be changed if necessary. Contract work for parts of the ship is now being tried by letting to a gang on contract at a certain fixed sum. The average mechanic's wage is $6.40 for an 8-hour day and with a 48-hour week. More and more of a decentralization of industries, taking them from big cities and locating in small towns, is probable—materials cost no more, and labor is more contented.

ITEMS OF INTEREST

The Committee on Publications will be glad to receive communications of general interest to the Society, and will consider them for publication in *Proceedings* in "Items of Interest". This is intended to cover letters or suggestions from our membership covering matters which are not of a technical character. Such communications, however, must not be controversial or commercial.

NATIONAL SERVICE DEPARTMENT OF ENGINEERING COUNCIL

In response to frequent expressions of need, Engineering Council announces the establishment of a National Legislative and Departmental Information Service for engineers in all branches of the Profession. Information relative to engineering statistics, research, and construction, as well as of matters before Congress involving engineering considerations, will be furnished without charge by addressing M. O. Leighton, National Service Representative of Engineering Council, 502 McLachlen Building, Washington, D. C. This National Service Department of Engineering Council announces that its office at Washington is open to members of the Society at all times, and that accommodations can be had there at short notice for committee meetings of the Society, or of any organization in which the Society is interested, which may be held in Washington.

UNITED ENGINEERING SOCIETY

Extracts from Treasurer's Annual Report for Year Ending December 31st, 1919

The Surplus Account on December 31st, 1918, showed a balance of $5 533.43. This amount has been increased by the surplus from the operating accounts during the year of $9 557.28, making a total on December 31st, 1919, of $15 090.71. Of this amount $10 000 has been transferred to Depreciation and Renewal Fund, leaving a balance in Surplus Account of $5 090.71.

The Gross Operating Expenses for the year 1919 were $66 812.89, as compared with $66 505.57 for the year 1918, an increase of $307.32.

The funds available for the Library Board, and spent under its direction during the year, amounted to $23 876.64.

The funds available for Engineering Council, and spent under its direction during the year, amounted to $49 012.38, of which $940.07 remained unexpended.

The General Reserve Fund of $10 000 created by the Board of Trustees at a meeting held November 18th, 1914, to be available to take care of unforeseen fluctuations of income and outlay, has been preserved intact, there arising no calls on this fund during the year 1919.

The Depreciation and Renewal Fund at the beginning of the year 1919 amounted to $86 163.78. During the year this fund has been increased by the sum of $4 035.22 for interest earned by the investments for this fund and by $10 000 added from the surplus at the end of the year, making a total of $100 199.00 on December 31st, 1919.

In accordance with the authorization of the Board of Trustees, February 27th, 1919, the sum of $13 000 was invested in Government of United Kingdom of Great Britain and Ireland, 20-year bonds, 5½'s, due February, 1937, $5 000 being reinvestment of proceeds from Bethlehem Steel Co., 2-year Second Gold Notes matured February 15th, 1919, and $8 000 cash transferred from Surplus to the Depreciation and Renewal Fund.

The following summary shows the amounts of the funds held by the United Engineering Society as of December 31st, 1919:

Depreciation and Renewal Fund, December 31st, 1918....	$86 163.78
Interest on invested funds during the year 1919.....	4 035.22
Transfer for the year 1919.....	10 000.00
Total	$100 199.00
General Reserve Fund.....	$10 000.00
Engineering Foundation Fund.....	303 374.80
Library Endowment Fund.....	102 559.70
Total	$516 133.50

TREASURER'S RECEIPTS AND PAYMENTS FOR 1919

Receipts

Cash on hand January 1st, 1919.....		$12 869.60
From Founder and Associate Societies:		
For office, storage, halls, telephone, and miscellaneous	$76 984.08	
From Societies not in building:		
For Halls	5 727.70	
For Miscellaneous	658.57	
For Library	15 737.42	
For Library Service Bureau.....	17 740.65	
For Library Recataloging	5 624.99	
For Engineering Council.....	46 958.91	
Interest collected on Bonds and Deposits.....	9 640.75	
Interest collected on Engineering Foundation Bonds	15 324.24	
Maturing of $5 000 Bethlehem Steel Corporation Bonds	5 000.00	
From A. I. M. E., for Building addition.....	2 500.00	
From A. I. E. E., for Building addition.....	2 500.00	
		204 397.31
Grand Total		$217 266.91

Payments

To Engineering Foundation:		
Income from investments, less collection charges	$15 331.74	
For Govt. of Great Britain and Ireland Bonds	13 169.72	
For Building Operating Expenses	75 350.56	
For Library	24 209.99	
For Library Service Bureau	17 459.33	
For Library Recataloging	4 361.31	
For Engineering Council	49 630.48	
For A. S. M. E. Notes	5 000.00	
For A. S. M. E. Interest on Notes	108.49	
For Collect charges and exchanges	108.11	
Total Payments		204 729.73
Cash on hand December 31st, 1919		$12 537.18
Grand Total		$217,266.91

ASSETS AND LIABILITIES

December 31st, 1919.

Assets

Real Estate	$1 947 171.16
Investments, Engineering Foundation Fund	303 321.25
Investments, Library Endowment Fund	102 297.50
Investments, General Fund	93 894.72
Cash	12 637.18
Accrued interest receivable	2 806.88
Bills receivable	7 500.00
Accounts receivable	8 742.43
Advances to Library Board	2 602.36
	$2 480 973.48

Liabilities

Founders equity in property	$1 947 171.16
Due to General Reserve Fund	10 000.00
Due to Depreciation and Renewal Fund	100 199.00
Due to Engineering Foundation Fund	303 374.80
Due to Library Endowment	102 559.70
Bills payable	7 500.00
Library cataloging, unexpended balance	1 472.01
Library Service Bureau, unexpended balance	2 666.03
Engineering Council, unexpended balance	940.07
Surplus, December 31st, 1919	5 090.71
	$2 480 973.48

Annual Meeting of the United Engineering Society

The annual meeting of the Trustees of United Engineering Society was held in the Engineering Societies Building, New York City, on January 22d, 1920, with 13 present.

To Charles F. Rand, whose services for six years as Trustee and four years as President expired at this meeting, the American Society of Mechanical Engineers presented by the hand of Trustee McFarland, engrossed resolutions expressing appreciation of faithful and efficient labors for the Societies. The Trustees unanimously voted to President Rand their thanks for able and generous services to the United Engineering Society.

Upon nomination, the following officers were elected: President, J. Vipond Davies, M. Am. Soc. C. E.; First Vice-President, Walter M. McFarland; Second Vice-President, Calvert Townley; Secretary, Alfred D. Flinn, M. Am. Soc. C. E.; Treasurer, Joseph Struthers.

The following members were elected to the Engineering Foundation Board for terms of three years:

Charles F. Rand, as member at large; George H. Pegram, Past-President, Am. Soc. C. E., as Trustee representing the American Society of Civil Engineers; E. Gybbon Spilsbury as Trustee representing the American Society of Mechanical Engineers; and Samuel Sheldon, as Trustee representing the American Institute of Electrical Engineers.

On nomination, Clemens Herschel and Calvert Townley were re-elected as representatives of United Engineering Society on Engineering Council for terms of three years.

An invitation from The Authors Club, dated January 13th, 1920, to join with other organization in a memorial meeting to Andrew Carnegie Wednesday afternoon, February 4th, was read. It was voted that this invitation be accepted, and that the United Engineering Society participate.

In a communication dated January 12th, signed by Director Craver, the Library Board suggested modification of By-Laws 87 and 91 to provide for the annual election of a Vice-Chairman of that Board, and for meetings of the Executive Committee at the call of the Chairman instead of monthly, as now required. Resolutions prepared by Mr. Rand were proposed, and adopted as follows:

"Resolved: That there be and hereby is established the office of Vice-Chairman of the Library Board.

"Resolved: That in the absence of the Chairman of the Library Board, the Vice-Chairman of the Library Board shall discharge his duties.

"Resolved: That until further action of the Trustees, the Executive Committee of the Library Board shall hold meetings at the call of the Chairman, or in his absence, of the Vice-Chairman, of the Library Board.

Annual Report of Chairman of Engineering Foundation for Year Ending February, 1920

TO THE ENGINEERING FOUNDATION BOARD:

At the beginning of the year the Board was confronted with the necessity of adjusting its relations with the National Research Council, then in the process of reorganization on a peace basis.

Engineering Foundation had early given its support to the work of the Council, certain of its members were also members of the Council, and the Council had announced its purpose to create as a part of its permanent organization a Division of Engineering. It was apparent that in the absence of understandings to the contrary, the Division of Engineering might function in the same field as Engineering Foundation and select agencies through which to work, some of which were closely associated with Engineering Foundation. It was thought important, in the interest of research, to develop a procedure which would provide a definite field of action for both organizations and which would permit each to function in harmony with the other. A special committee gave careful attention to the various aspects of this problem. Conferences were held. The Committee finally recommended and the Board approved five proposals which may be briefly summarized as follows:

1.—That Engineering Foundation would work in close affiliation with the National Research Council.

2.—That Engineering Foundation would provide office space and contribute to the office expenses of the Engineering Division of the Council.

3.—That Engineering Foundation would approve a plan whereby a certain number of the members of Engineering Division of the Council would be selected from the membership of Engineering Foundation, and others from the membership of the Founder Societies.

4.—That Engineering Foundation would collaborate with the Engineering Division of the Council and would make such appropriations of funds to aid in such specific undertakings of the Division, as the Foundation may from time to time determine, and

5.—That Engineering Foundation would under certain conditions join with Engineering Division of the Council in joint publications.

These provisions have been in effect since their adoption by the Board on April 22d.

Progress has been made in the development of research under grants from the Foundation. Mr. Clemens Herschel has completed an elaborate series of tests upon hydraulic weirs and has completed a report which has recently been published by the American Society of Mechanical Engineers.* Dr. E. E. Southard's work on Mental Hygiene of

* *Mechanical Engineering*, February, 1920, p. 83.

Industry, which was started last year, was proceeding with satisfactory results until Dr. Southard's sudden death on February 8th. Publications with reference to both of these undertakings have appeared during the year.

Suggestions having been invited, the Division of Engineering recommended to the Foundation a study of the Fatigue Phenomena of Metals, in co-operation with the Engineering Experiment Station of the University of Illinois, the Engineering Division also participating. The accrual of unexpended balances of previous years permitted the Foundation to finance this project, notwithstanding the fact that the rate of expenditure involved was in excess of the Foundation's present rate of income. The program provided that the actual tests involved in this research are to be made by the University of Illinois; that the work is to be supervised on behalf of the Foundation by the Engineering Division; and that the major part of the funds needed are to be supplied by the Foundation. This work is already in progress.

The assistance of Engineering Foundation was sought during the summer by the Division of Engineering of the National Research Council in bringing about some elaboration of the Division's staff organization. The distinguished Chairman of the Division could no longer carry the routine of his office and asked to be relieved. The members of the Division believed that advantage would accrue to the Division by a retention of its pioneer leader as honorary chairman and by the appointment of a scientist of proven ability as a full-time active chairman. It asked whether Engineering Foundation could apply the funds necessary to such an arrangement. The Foundation Board agreed so to do and Dr. Henry M. Howe became the Honorary Chairman of the Division and Dr. Comfort A. Adams its active Chairman, an arrangement which supplied Engineering Division with leadership of a very unusual character.

The appropriation of funds to the Engineering Division necessary to the revised plan of organization just outlined, superimposed upon a liberal program of expenditure previously adopted for the support of its several researches, have been easily met during the present year. Assuming all expenditures to proceed at the rate they have been planned, deficits will accrue during the two years next succeeding. It is probable, however, that the rate of expenditures planned will not be realized, and that in the absence of further appropriations no actual deficits will occur. In order, however, to save the Foundation from possible embarrassment, a member of the Foundation Board, Mr. Edward Dean Adams, has generously guaranteed to protect the Board by contributing the sum of any deficit occurring in the discharge of obligations it has already assumed. The details of these several matters have been presented to the Board from time to time and constitute a part of its official record.

There have been many expressions of a desire during the year to enlarge the financial resources of Engineering Foundation. The policy to be followed in the solicitation of funds for this purpose has been a matter that has received the attention of a Special Committee of which Mr. Edward Dean Adams has been Chairman. A definite agreement has been reached with National Research Council, which should prevent conflict of interests in the solicitation of funds. There have been drafted for United Engineering Society as the holder of the endowment for Engineering Foundation: (1) Declaration of Trust, (2) Deed of Trust, (3) Form of Deed of Gift. The preparation of these documents is to be accepted as an important first step toward the solicitation of large sums for credit to the endowment fund of Engineering Foundation.

With these preparations of the Committee came a letter from Mr. Ambrose Swasey, which in full is as follows:

"December 19, 1919.

"DR. W. F. M. GOSS, Chairman,
Engineering Foundation,
New York.

"DEAR DOCTOR GOSS:

"I have always regarded my gifts to United Engineering Society for the support of Engineering Foundation, as an initial step in the development of an undertaking which would gain support from many sources and continue to develop year by year. As time has passed and as the service rendered by Engineering Foundation has increased, the reasonableness of such a view has become more and more apparent.

"The purpose of this note therefore is to say that I am prepared to add to the amounts I have already given for the benefit of Engineering Foundation, the sum of Two Hundred Thousand ($200,000) Dollars, and that I will do this as soon as gifts from other sources can be obtained which will equal the sum of the amounts which I have given and herein propose to give, namely, a half million dollars.

"While I am not disposed to complicate this proposal by the addition of any condition as to time, I assume that it will be the wish of the Foundation Board and of the United Engineering Society to make it possible for me to complete my gift under the terms of this note at as early a date as practicable, certainly during the calendar year of 1920.

Very truly yours,
(Signed) AMBROSE SWASEY."

In presenting this brief summary of a year's activity, your Chairman is impressed with the fact that Engineering Foundation is still in its formative state. In common with other undertakings new in character having relations, active and potential, of a very diverse sort, it has in its development been confronted by questions difficult of solution. There is nothing uncomplimentary in the statement that members of the Board have at times entertained widely different views with ref-

erence to matters of fundamental importance. In the settlement of such matters it has been deemed safe to follow the leadership of a clear majority. For example:

1.—For some years past there have been two widely divergent views in the Foundation Board concerning the means whereby the element of leadership should be supplied to the Board. A minority view has urged as a first requisite in the development of the purposes of the Board, the appointment of an Executive Secretary, notwithstanding the fact that the cost of such an officer and of his office would, for the time being, absorb practically all of the resources of the Foundation. A majority of the Board have been of the opinion that until the revenues of the Foundation could be enlarged, the Board should forego the advantages which would accrue from the presence of such an officer, and this view has been accepted as the view of the Board.

2.—In the development of Engineering Division of National Research Council, a majority of the Foundation Board have seen an agency which could serve the Foundation by supplying advisory leadership for the scientific aspects of its work, and by so doing make good the deficiency in the Board's own organization which a minority had been seeking to secure through the appointment of an Executive Secretary, and the Board has accepted the good offices of the Engineering Division.

3.—Engineering Foundation having accepted the leadership of Engineering Division, has subsequently consistently sought to make that leadership strong, and its direct grants to Engineering Division have been to this end. It is assumed that Foundation money invested in the organization of Engineering Division staff, is money spent for organized leadership for Engineering Foundation.

By these several procedures, the Foundation Board has secured superior leadership for its scientific activities, and it has developed co-operative relations where otherwise there might easily have been competition.

Respectfully submitted,
W. F. M. Goss,
Chairman.

ACTIVITIES OF ENGINEERING COUNCIL

Chairman's Report for Year Ending February, 1920

Items of special interest during the third year of Engineering Council's activities may be summarized as follows, according to the annual report of the Chairman, J. Parke Channing.

Council held five meetings; three in New York, one in Chicago in April, and one in Washington in June.

The total expenditures for the calendar year 1919 were $49 000, including $25 000 advanced by the Chairman for the expenses of the Washington office.

The Washington office was opened January 1st, 1919.

The American Society for Testing Materials completed qualifications as the fifth member society in February, and has since taken an active part in Council's work.

In April, Engineering Council called together in Chicago representatives of 74 technical organizations having 105 000 members, to discuss an effort to secure a National Department of Public Works. To conduct and finance this movement, there was created a body now known as the National Public Works Department Association. Branch organizations have been established in most of the States. Work has been directed chiefly from Council's Washington office. A bill was introduced into both houses of Congress. The Chamber of Commerce, U. S. A., was asked to submit the question to referendum, and appointed a special committee to investigate. Engineering Council appointed a committee to present arguments before the Chamber's committee. Meetings of these committees were held January 19th and 20th, 1920, in Washington, and the Chamber decided to issue the referendum. A second convention was held in Washington January 13th and 14th, 1920, at which 124 organizations were represented and good progress reported, except in collection of funds needed for support of the Association.

In September, Engineering Council became a member of the Chamber of Commerce, U. S. A.

Engineering Societies Employment Bureau, organized immediately after the Armistice, was maintained throughout the year. It registered 5 400 engineers, the majority of whom had been in Military or Naval Service, and aided a large proportion to find positions. It rendered service to both employers and employees without charge, but at a cost to the Founder Societies of more than $16 000. The Secretaries of the Founder Societies were the Board of Directors. At the end of the year, the Bureau was detached from Engineering Council by actions of the Founder Societies.

A Committee on Classification and Compensation of Engineers, created in March, worked in three sections dealing with engineers in the employment of (1) Federal Government, (2) Railways, (3) Cities and States. The committee has co-operated with the Congressional Commission on Reclassification of Salaries of Government Employees. A preliminary Report of the Federal Section was printed in pamphlet form by the Washington Academy of Sciences in November, 1919. In January, 1920, a report of the whole committee was published* in abbreviated form by the Founder Societies and the technical journals, espe-

* *Proceedings*, Am. Soc. C. E., January, 1920, p. 42.

cially *Engineering News-Record.* This report contained a standard classification of engineers (for purposes of compensation) and a suggested, tentative schedule of salaries for engineers in governmental employment.

To expedite completion of topographical maps of the United States, President Wilson, in response to a communication from Engineering Council, by Executive Order, constituted a Board of Surveys and Maps, of one representative each from the fourteen map-making agencies of the Government, and invited representatives of Engineering Council and engineering and scientific societies to co-operate. The new board set up a permanent organization on January 13th, 1920.*

The Committee on Licensing Engineers, after fourteen months' work, presented in December a valuable report accompanied by a "Recommended Uniform Registration Law, to regulate the practice of professional engineering, architecture and land surveying". This report has been published† and will be considered by Council at its February meeting.

Forty correspondents have been appointed in as many engineering centers in various parts of the country, and to them "Notes" and "Bulletins" about Council's work have been sent at frequent intervals from the New York and Washington offices.

The Fuel Conservation Committee continued co-operation with the Government, and recommended support of a Federal appropriation for a survey to determine the desirability of a super-power system in the industrial region extending from Boston to Washington.

The Water Conservation Committee appointed correspondents in 27 States, is seeking correspondents in other States, is collecting useful information, and is aiding the Maine Water Power Commission on questions of policy in response to a request from its Chief Engineer.

To the Reconstruction Commission of the State of New York, a special committee of engineers appointed by Council gave assistance in preparing a Report on Retrenchment and Reorganization in the State Government.

By public hearing, in January, 1919, Engineering Council aided the reinstatement of 350 engineers unfairly dismissed by the City of New York. It also assisted late in the year in securing better salaries for these and other engineers and in preventing a recurrence of last year's unfortunate conditions.

Council took part in organizing a National Board for Jurisdictional Awards in the Building Industries, and has a member thereon.

Council appointed three representatives to co-operate with equal numbers from the American Institute of Architects and the Associated

* *Proceedings*, Am. Soc. C. E., February, 1920, p. 261.

† *Proceedings*, Am. Soc. C. E., January, 1920, p. 27.

General Contractors of America, to determine a policy regarding "Payment for Estimating".

Late in 1919, and in January, 1920, committees were appointed on Types of Government Contracts, on Military Affairs, on Co-operation with the American Institute of Architects, and on Co-operation with the Association of Russian Engineers in America. In response to request, special assistance was given the Signal Corps, United States Army, in connection with bills before Congress.

On a National Budget System, Council presented testimony through four delegates sent to Washington on invitation of the Select Committee of the House of Representatives.

Council gave much assistance to the War Department Claims Board in securing technical experts to review reports on claims amounting to approximately $2 000 000 000.

During the past year it was impracticable for the Secretary to make more than a few visits to Engineering Societies, and then only to those relatively near New York. The combination of duties for United Engineering Society, Engineering Foundation and Council, together with lack of funds, prevented further visits. Nevertheless, many personal visits on behalf of Engineering Council have been made to groups of engineers from coast to coast by the Chairman; by Representatives Baker, Cooley, Hollis, Loweth, Moore, Skinner and Townley; by Chairman Leighton, of the National Service Committee; and by Secretaries Stoughton and Rice, of the Mining Engineers and the Mechanical Engineers, respectively. Several local societies, by letter or personal representative, have requested and received advice and other assistance from Council's office.

Engineering Council has continued to be handicapped by lack of adequate financing. At the suggestion, and with the approval of the member Societies, as an emergency measure, late in 1919, Council sent to 50 000 engineers throughout the country, an appeal for $30 000 to supply the minimum deficiency in requirements for 1920, over and above the amounts appropriated by the member Societies. Up to February 10th, 1920, 779 contributions have been received, totaling $5 530.90.

The Joint Conference Committee of the Founder Societies has recommended material changes in Council's form of organization. Council has approved the general principles of this report.

To determine questions as to future organization and financial support, Engineering Council invited the governing bodies of its member Societies to a joint conference in New York, January 23d, 1920. There were also invited the Joint Conference Committee and the Trustees of United Engineering Society.*

* *Proceedings*, Am. Soc. C. E., February, 1920, p. 257.

Report of the Third Annual Meeting

The Third Annual Meeting of Engineering Council was called to order by Chairman J. Parke Channing, February 19th, 1920, in the Engineering Societies Building, New York City, with 21 present.

The Secretary reported that he had been duly notified of the election of new representatives. The representatives for the year ending at the Annual Meeting in February, 1921, are as follows:

American Society of Civil Engineers: Charles S. Churchill, Alex. C. Humphreys, Charles F. Loweth, Arthur N. Talbot, Joseph R. Worcester.

American Institute of Mining and Metallurgical Engineers: J. Parke Channing, Sidney J. Jennings, Edwin Ludlow, Philip N. Moore, F. T. Rubidge.*

American Society of Mechanical Engineers: L. P. Alford,* Charles Whiting Baker, Arthur M. Greene, Jr.,* Charles T. Main,* Fred J. Miller.*

American Institute of Electrical Engineers: Comfort A. Adams, Harold W. Buck, N. A. Carle, Charles S. Ruffner,* Charles E. Skinner.

American Society for Testing Materials: Albert Ladd Colby.

United Engineering Society: Clemens Herschel, I. E. Moultrop, B. B. Thayer, Calvert Townley.

The financial statement for the year showed a total expenditure of about $49 000, including the expenses of $25 000 for the National Service Committee which was guaranteed and personally paid in full by Chairman Channing. An unexpended balance of $940.07 was reported.

F. C. Shenehon, M. Am. Soc. C. E., presented a report from the Joint Committee on Co-operation with the American Institute of Architects stating that the Committee had discussed the report of the Committee on Licensing Engineers and the recommended Uniform Registration Law. The representatives of the Institute called attention to the fact that probably the model law created a wrong impression in its definition of a building and that it should be modified in this particular; they also stated that they believed this Uniform Registration Law should be submitted to the American Institute of Architects so that it might study the question as to whether it would be possible or advisable to recommend such a uniform law covering both engineers and architects. In this the representatives of Engineering Council agreed.

Upon the recommendation of this Joint Committee, action concerning the report of the Licensing Committee was deferred until the Institute of Architects shall have had opportunity for thorough consideration and for reporting its findings to Council. The Chairman was authorized to send copies of the Uniform Registration Law to States now considering the question of licensing.

* Newly elected representatives.

Charles A. Terry's resignation as Chairman of the Patents Committee was accepted and Edwin J. Prindle was appointed in his stead. The Secretary was authorized to prepare a resolution expressing the approval of Engineering Council to the Nolan Bill and urging its passage. The following resolution was prepared and presented at a hearing before the Rules Committee of the House of Representatives:

"Whereas, Engineering Council has been informed by its Patent Committee that H. R. 11984, known as the Nolan Bill, consists essentially of provisions contained in bills previously endorsed by Council as the results of the labors of the Patents Committees of National Research Council and Engineering Council, and

"Whereas, it is believed that H. R. 11984, if enacted, will go a long distance towards correcting many present defects in the United States Patent System, be it

"Resolved: that Engineering Council approves in general the provisions of H. R. 11984, and urges its early passage."

Arthur P. Davis, President, Am. Soc. C. E., and Chairman of the Committee on Types of Government Contracts, presented a report by letter stating that the Committee had undertaken correspondence, especially with those having had experience with contract work for the Government, which had resulted in a large volume of replies containing criticism or suggestions of value, and that these were being digested for consideration by the Committee; also that a tabulation of the types of government contracts now in use by the various government bureaus had been undertaken, and that a great variety of practice, some of which might perhaps be standardized, was indicated.

M. O. Leighton, M. Am. Soc. C. E., Chairman of the National Service Committee, presented a report covering the activities of that Committee. In accordance with the recommendation of Chairman Leighton, the National Service Committee was discharged with thanks, and it was voted that the Washington office be continued and its name changed to "National Service Department of Engineering Council"; it was also voted that M. O. Leighton be continued as the Washington representative of Engineering Council, with the title "National Service Representative".

Col. J. J. Carty's resignation as a member of the Military Affairs Committee was accepted with regrets.

Mr. Leighton reported that by the terms of the Railroad Bill, the number of members of the Interstate Commerce Commission would be increased by two and that, with one existing vacancy, there would be three places to be filled. It was voted that a communication be sent to the President, suggesting that it would be desirable to appoint one or more engineers on the Interstate Commerce Commission; also that there be submitted to him a list of three names.

The following Committees were discharged with thanks: Ameri canization Committee; Advisory Committee to New York State Recon

struction Commission; Publicity Committee; Publicity Methods Committee; Reconstruction Committee, and Advisory Committee to Bureau of Municipal Research.

A budget for a total of $53 000 for the year 1920 was adopted as a minimum. Of the $5 000 estimated for Committees and Contingencies, $3 000 was appropriated for the use of the Committee on Classification and Compensation of Engineers.

After the report of the Nominating Committee, the following officers were elected: Chairman, J. Parke Channing; First Vice-Chairman, H. W. Buck; Second Vice-Chairman, Charles S. Churchill, M. Am. Soc. C. E.; Secretary, Alfred D. Flinn, M. Am. Soc. C. E.; additional members of Executive Committee, Alex. C. Humphreys, M. Am. Soc. C. E., Charles Whiting Baker, and Philip N. Moore.

Military Affairs Committee

Under date of February 26th, 1920, the Military Affairs Committee* submitted the following communication to Engineering Council:

"1.—We believe it of vital National importance that sound Military Legislation should be enacted during the present session of Congress.

"2.—Effective provision for National defense with an adequate, organized, trained Army and Navy, sufficient to discharge our national and international obligations, is essential to security and stability, which must be present if our country is to go forward in constructive activity and achieve its possibilities as a nation.

"3.—The training of the entire youth of the nation and the establishment of organized reserves are indispensable provisions for National defense. With an adequate, organized citizen force, so that a minimum of professional soldiers is required, that maximum protection is afforded with a minimum of expense.

"4.—The careful selection and training of personnel and their assignment, when reservists, to organized reserve units, are vitally important to the efficiency of the technical services of the Army and Navy, and therefore essential to the proper preparedness of the individuals of the Engineering and allied professions and trades for the discharge of their constitutional obligations in National military service.

"5.—The full utilization of specially and technically qualified men and specialized industries has proved impossible where an organization was built up only after war had become imminent or had been declared.

"6.—The status of the membership of the National Engineering Societies with respect to all military matters, on which to base their plans for individual and collective preparedness, must remain indefinite until a military policy and principles of a military organization shall have been determined.

"7.—Therefore, we believe National security and stability can be assured only by application of the foregoing principles, in particular

* *Proceedings*, Am. Soc. C. E., February, 1920, p. 260.

the principle of universal military training and the creation of organized reserves, above all in the technical branches.

"We, therefore, recommend to Engineering Council that the President and Vice-President of the United States, the Secretary of War, the Secretary of the Navy, the Speaker of the House and the Chairmen and Members of the Military and Naval Committees of the Senate and the House be urged to incorporate the foregoing principles into any bills passed by either body for Army or Navy organization, and particularly the principle of universal training.

"We also recommend that each member of the Founder Societies (American societies of Civil, Mining, Metallurgical, Mechanical and Electrical engineers) be urged to study carefully the foregoing principles of military policy and in case, in the light of such study, he endorses said principles, to give his active support through letters to his Senators and Congressmen, or otherwise, to their incorporation in pending legislation."

The members of the Military Affairs Committee are as follows:

Col. Wm. Barclay Parsons, Chairman
Mr. Paul G. Brown, Vice-Chairman
Lt.-Col. George D. Snyder, Secretary
Col. Roger D. Black,
Mr. Harold W. Buck,
Col. Lincoln Bush,
Col. John J. Carty,
Col. H. S. Crocker,
Col. B. W. Dunn,
Maj. Arthur S. Dwight,
Capt. Alfred B. Fry,
Mr. George Gibbs,
Maj. Fred J. Miller,
Mr. Spencer Miller,
Col. F. A. Snyder,
Col. F. A. Molitor,
Col. G. R. Solomon,
Col. W. A. Starrett,
Dr. Leonard Waldo.

At a meeting of Engineering Council's Executive Committee on March 3d, 1920, it was voted to adopt the foregoing resolutions relating to the military policy of the United States prepared and recommended by the Military Affairs Committee.

Hearing on Nolan Patent Bill Before House Rules Committee

At a hearing before the Rules Committee of the House of Representatives, arranged by Edwin J. Prindle, Chairman of the Patents Committee of Engineering Council and Secretary of the Patents Committee of the National Research Council, a delegation of 68 representative men from many scientific, engineering, manufacturing and industrial organizations so impressed the Rules Committee that it granted the request that the Nolan Bill, H. R. 11 984 be placed on the calendar for an early hearing.

The Chairman of the Rules Committee stated that it was the most forceful and satisfactory hearing before that Committee during the past 10 years. Mr. Calvert Townley, as a representative of Engineer-

ing Council and President of the American Institute of Electrical Engineers, addressed the Committee and presented the resolution favoring the Nolan Bill authorized by Engineering Council at its Annual Meeting.*

Work of the Forest Products Laboratory

The Forest Products Laboratory, Madison, Wis., maintained by the Forest Service, U. S. Department of Agriculture, has been forced, through lack of funds, to reduce its working force until it now numbers about 200, one-third less than five months ago. The field of activity covered by the work of the Laboratory is suggested by the following lines of investigation undertaken:

Pulp and paper; hardwood and softwood distillation; preservation of wood; decay and decay prevention; mechanical properties of wood; glues for wood; kiln drying and air seasoning; grading structural timbers; grading lumber; boxing, crating, packing; chemistry of wood; needle and leaf oils; ethyl alcohol from wood waste; wood finishes, aircraft parts; veneers and plywood; steam bending; identification of wood, and microscopy of wood.

Among typical examples of the value of the work may be mentioned the following:

Boxing, Crating, Packing.—This work affects all shippers, railroads, express companies, and all consignees of goods which are boxed or crated, through the great saving which can be made by improved methods of packing.

Kiln Drying.—Improper methods of seasoning wood are causing great losses of lumber and money in all the wood-working trades, and are in no small degree responsible for the critical condition in which these industries find themselves to-day. They are not, however, the prime cause for this condition. To remedy these improper methods requires the thorough education of the industries in proper drying methods, in addition to special studies of commercial conditions.

Water-Resistant Glues.—Funds provided by the Army and Navy permitted the Laboratory to develop a number of water-resistant glues and to gather together a fund of knowledge about glues of these types which has been valuable in assisting many users of glue to solve various problems with which they are confronted. This work is of great importance to all wood-using industries. The development of still better and cheaper types of glues, indicated as readily possible by the work already done, must await more funds.

Pulp and Paper.—The increasing shortage of suitable pulpwood of the species most currently used for that purpose makes necessary the continuation of studies to determine the suitability of various other available woods for this purpose. An investigation of particular impor-

* See page 344.

tance which should be conducted is that to determine the methods of preventing the enormous losses resulting from decay of ground wood pulp while in storage.

Presentation of Washington Award to Herbert Hoover

Formal presentation of the Washington Award for 1918 to Herbert Clark Hoover, M. Am. Soc. C. E., was made in Chicago on February 28th, 1920, under the auspices of Western Society of Engineers. Several hundred engineers awaited the arrival of Mr. Hoover, whose train was delayed, until nearly midnight, when presentation addresses were made by Charles F. Loweth, M. Am. Soc. C. E., Chairman of the Washington Award Commission, for the Western Society of Engineers; Onward Bates, M. Am. Soc. C. E., for The American Society of Civil Engineers; Charles H. MacDowell, for the American Institute of Mining and Metallurgical Engineers; James R. Bibbins, for the American Society of Mechanical Engineers; and Bion J. Arnold, M. Am. Soc. C. E., for the American Institute of Electrical Engineers.

Mr. Hoover, after accepting "as a tribute to the thousand engineers who were associated with him" made an address on the "Inter-relationship of General Industry and Food Production".

The text of the certificates of award is as follows:

"'To be awarded to a member of the engineering profession who has accomplished much for the world about him in vital, important, far-reaching ways, and whose services in general have been noteworthy for merit in promoting the public welfare.'

"In these words were expressed the wishes of the Donor of the Washington Award.

"With Belgium's first cry of anguish, as war's tidal wave swept over that country, driving before and engulfing its people, an appeal came for a leader; for a man of character and experience; possessing great executive and co-operative ability; with courage to decide and act. The time was short. Upon such a man must devolve the stupendous task of organizing and administering a relief. The people of a nation must be fed and clothed, and at once, if the final phase of a great disaster was to be averted.

"That man was found. He was an engineer. His chief aids were engineers.

"The flow sheet of succor was drafted, and the finished mechanism of a relief program was soon functioning with little friction and with great efficiency.

"With the entrance of the United States into the world war, there arose again need for a leader,—one who could administer food problems on a still more gigantic scale; problems that related to our own requirements and to still more vital necessities of Europe. America must grow more field crops. The Allies must be sustained.

"The leader was found. He was an engineer. The work was done. Loyal American producers did their part.

"With the signing of the Armistice and with the break-down of morale among the enemy and in Eastern Europe, yet another pressing

problem had to be met. Further relief for war-disrupted peoples became a stern necessity. A man must be had equal to the needs of peace as well as the tasks of war.

"The man was found. He was an engineer.

"Then the negotiations for peace began. Amidst the intricate problems that arose, there emerged a clear call for a man with comprehensive knowledge of European conditions, with a grasp beyond the ordinary of food requirements and transport possibilities. Who should the man be? Once again, the engineer.

"From the end of the war until now, famine and disease have been rampant in Eastern Europe. Little folks, innocent children, have suffered, and are suffering. Young lives have been, and are being, sacrificed. Relief is vital. It has been established. The engineer is at the helm.

"In all of his urgent duties and his activities in many capacities, this engineer has not been found wanting. His colleagues everywhere have been uplifted by his deeds. They have been inspired to appreciation of a new and better kind of recompense for their professional labors—the recompense of a world's gratitude for unselfish public service.

"It is abundantly in keeping with the wishes of the Donor of the Washington Award to honor the engineer who has met these epochal emergencies; who has rendered unselfishly and efficiently a public service that has made many nations and peoples his debtor; and who has added so much to the luster and high standing of the engineering profession. Therefore, by authority vested in them, the Commission do hereby, through their chairman and in behalf of the Western Society of Engineers, confer the Washington Award for distinguished public service upon our eminent colleague,

HERBERT CLARK HOOVER."

Prefect of Constantinople Desires Engineer Specialists

A letter from the Prefect of Constantinople, Turkey, states that "it is intended to reconstruct the City of Constantinople on completely new plans in order to place it on the level of a modern Capitol, provided with all the modern hygienic, scientific, and artistic improvements which the town deserves according to its exceptional situation and climate."

He makes the request that he be put in touch with engineers and architects who are specialists along these lines. The address given is "Prefecture de la Ville, Cabinet du Prefet, Constantinople, Turkey."

EUROPEAN NOTES

The following notes relative to reconstruction, etc., in Belgium and France, and industrial progress, etc., in Great Britain and elsewhere, have been contributed by W. E. Woolley, Assoc. M. Am. Soc. C. E., of London, England, who is also a Corresponding Member of the Association of Liége (Belgium) Architects.

Law Provisions to Help Solve England's Housing Problem

To supplement the item on the "Housing Problem in England",* the following abstract of the recent Act of 1919 "to amend the enactments relative to the Housing of the Working Classes, Town Planning, and the Acquisition of Small Dwellings", indicates how the British Government has attempted to meet a serious situation.

The amended Act states that it shall be the duty of every local authority to consider the needs of their area with respect to houses for the working classes and, within three months of the passage of the Act or after notice has been given by the Local Government Board, to prepare and submit to the said Board a scheme for the exercise of their powers. Other clauses deal with the power of the local authorities to acquire land, and state the purposes for which land may be acquired; provision is also made for the assistance of public utility societies, housing trusts, etc., wherein it is stated that the local authority may promote the formation or extension of, or assist, a public utility society in matters of housing.

Local authorities may make loans to the owners of house property for the reconstruction, enlargement or improvement of existing housing accommodation. The conversion of large houses into several tenements, where the house cannot readily be rented as a single tenement, but could be let if divided into two or more, is authorized. However, the case must be proved to the satisfaction of the County Court on an application by the local authority or any person interested.

It is also provided that "The council of every borough or other urban district containing on the 1st of January, 1923, a population according to the last census * * * of more than 20 000 shall, within three years after that date, prepare and submit to the Local Government Board a town planning scheme * * *" so that, in effect, there will be compulsory town planning in the near future.

So pressing is the present need, now that many men have returned from military service, that in many places, as in Liverpool and Northampton, army huts have been erected to serve as temporary homes, and these are being let at extremely good rents.

Local authorities all over the country are now engaged on their housing schemes. Up to the end of August the number of schemes submitted to the Ministry of Health was 4 546, of which 1 419 have been approved, covering 18 200 acres. Plans have been approved which provide for 25 788 houses. The number of houses upon which building work has been begun is about 8 000, according to the Ministry's Housing Report.

If the owner of a house wishes to convert it into flats for the working classes, the Housing Act permits the local authority to loan a part or the whole of the necessary cash. It is suggested that the rate of

* October–November–December, 1919, *Proceedings*, p. 961.

interest should be ½%, and the loan must not exceed half the value of the property. Terrace houses in groups can be readily converted into flats with one common staircase. Several London boroughs are taking up this matter, and it is stated that some 4 000 houses in the metropolitan area alone are suitable for such conversion into flats.

At present prices, the cost of erecting a small artisan's dwelling of a very plain type would be about £650, or about 1s. 2d. per cu. ft., about 2½ times as much as in 1914. Many authorities have received tenders considerably higher, even as high as £1 000 or £1 100.

Concrete has been advocated by many, largely as a cheaper material than brick, and has been used with success at several places, one notable example at Chepstow, Monmouth, where some hundreds of houses of this material, designed by well-known architects, have been erected. The walls are hollow, and are constructed of concrete blocks on the "Winget" principle, made by machines on the work.

Canal from the Elbe to the Danube

A Tcheco-Slovak Navigation Co. has been established at Pressburg with the object of canalizing towards this town the traffic from the Elbe to the Danube. It is stated that the preparatory negotiations have been terminated. The canal, which will have a length of 555 kilometers, will end at Pressburg, where a modern bridge will be erected. The company will have agencies at Hamburg, Aussig and in Roumania.

The Meuse Canal, Belgium

There is a strong movement in Belgium—which many notables are supporting—to canalize the middle Meuse from Liége to the Dutch frontier, making a boat canal to take 2 000-ton boats from Lische to Antwerp.

National Congress of Belgian Architects

The National Congress of Architects had expressed a wish that there should be organized a "Committee of Allotment or Distribution of Architectural Works", composed of nine members to be elected by the architects of the various devastated regions. This Committee has been formed, according to *La Libre Belgique,* but Flanders "Occidentale" is represented by an architect who is foreign to the province, and not a member of the only society of architects established there and affiliated with the Federation. The candidates of this society have been eliminated. The society protests and asks the competent ministry to intervene.

Rebuilding of Rheims

The Rheims Municipal Council has approved a rebuilding scheme submitted by Mr. George Ford, formerly an American Red Cross officer in France.

The areas destroyed by shell-fire during the war will be rebuilt with old-fashioned houses and thoroughfares in keeping with the rest of the town.

BRIEF NOTES

In concluding his address as retiring President of the Western Society of Engineers, A. S. Baldwin, M. Am. Soc. C. E., made the following significant statement: "As an Engineer, I have been endeavoring by cold analysis to resolve the most potent and practical force that is at the disposal of the Engineer for the accomplishment of great works, and I arrive at the conclusion that it is the force of Good Will. The world is in desperate need of it to-day, and I believe that when that force is fully and fairly recognized and used as a means to an end, the world will see works of magnitude and beauty so far in advance of the works of to-day as to be beyond the present conception of man."

The National Research Council has received from the Southern Pine Association a gift of $10 000 to pay for incidental expenses of a co-ordinated scientific study by a number of investigators of the re-growth of trees on cut-over forest lands, for the purpose of determining the best forestry methods for obtaining the highest productivity.

Nearly 75 colleges throughout the country are conducting campaigns for endowment funds to increase the pay of their professors and to provide new buildings and facilities. The estimated total sought is more than $200 000 000.

Plans for the reconstruction of the operating organization of the Pennsylvania Railroad system on termination of Government control on March 1st were adopted by the Board of Directors. Among the changes are greater unification of the system for operating purposes, establishment of a new organization affecting all departments and the creation of a regional plan of operation and management.

About one-third of the men of draft age in the United States are engaged in agriculture and allied occupations and another third in manufacturing and mechanical industries. This is shown by records of both the census and draft registrations. Nearly 9 000 000 men between the ages of 21 and 31 registered in the first draft.

Captain Craven, Director of Naval Aviation, told the House Naval Committee that two superdirigibles, the largest in the world, are

planned by the Navy, and that one of them now being built in England will attempt a transatlantic flight next fall.

It is announced from Naples that, in the opinion of American officials in Italy, more Italians will emigrate to the United States this year (1920) than in the record year of 1913, when 375 000 left that country for America.

New cable lines connecting the Brazilian ports of Santos and Rio de Janeiro with the present all-American cable system at Montevideo and Buenos Aires, provide direct communication between the United States and Brazil.

Americanization efforts in Cleveland have brought about a shifting of the foreign-born population, which is no longer confined to territories near industries. Formerly, the foreign-born were grouped in settlements. Now, with every industry fostering Americanization, these settlements are becoming mixed, and new districts are developing.

ANNOUNCEMENTS

The Reading Room of the Society is open from 9 A. M. to 10 P. M., every day, except Sundays, New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, and Christmas Day; during July and August, it is closed at 6 P. M.

FUTURE MEETINGS

April 7th, 1920.—8.30 P. M.—A regular business meeting will be held, and a paper by Herbert C. Keith, M. Am. Soc. C. E., entitled "A Novel Method of Repairing a Swing Bridge," will be presented for discussion.

This paper was printed in *Proceedings* for February, 1920.

April 21st, 1920.—8.30 P. M.—At this meeting a paper by S. Johannesson and B. H. M. Hewett, Members, Am. Soc. C. E., entitled "Notes on Tunnel Lining" will be presented for discussion.

This paper is printed in this number of *Proceedings*.

ENGINEERING SOCIETIES EMPLOYMENT BUREAU

Engineering Societies Employment Bureau, established December 1st, 1918, as an activity of Engineering Council, is managed by a board made up of the Secretaries of the four Founder Societies, funds for its maintenance being provided by these Societies. The Bureau is co-operating with Engineering organizations in all parts of the country and with the Re-employment Bureau under the auspices of the American Legion. It is desirous of increasing such co-operation by working with local engineering associations and clubs. The work of the Bureau since its inception has been largely in the line of securing employment for men retiring from government war service. Members of the American Society of Civil Engineers who desire to register with this Bureau should apply for further information, registration forms, etc., to Walter V. Brown, Manager, Engineering Societies Employment Bureau, First Floor, Engineering Societies Building, 29 West 39th Street, New York City.

SEARCHES IN THE LIBRARY

As the Library of the American Society of Civil Engineers has been merged in the Engineering Societies Library, requests for searches, copies, translations, etc., should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York City, who will gladly give information concerning the charges for the various kinds of service. A more comprehensive statement in regard to this matter will be found on page 21 of the Year Book for 1920.

PAPERS AND DISCUSSIONS

Members and others who take part in the oral discussions of the papers presented are urged to revise their remarks promptly. Written communications from those who cannot attend the meetings should be sent in at the earliest possible date after the issue of a paper in *Proceedings.*

All papers accepted by the Publication Committee are classified by the Committee with respect to their availability for discussion at meetings.

Papers which, from their general nature, appear to be of a character suitable for oral discussion will be published as heretofore in *Proceedings,* and set down for presentation to a future meeting of the Society, and, on these, oral discussion, as well as written communications, will be solicited.

All papers which do not come under this heading, that is to say, those which from their mathematical or technical nature, in the opinion of the Committee, are not adapted to oral discussion, will not be scheduled for presentation to any meeting. Such papers will be published in *Proceedings* in the same manner as those which are to be presented at meetings, but written discussions only will be requested for subsequent publication in *Proceedings* and with the paper in the volumes of *Transactions.*

The Board of Direction has adopted rules for the preparation and presentation of papers, which will be found on page 35 of the Year Book for 1920.

LOCAL ASSOCIATIONS OF MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

San Francisco Association, Organized 1905.

M. M. O'Shaughnessy, President; Nathan A. Bowers, Secretary-Treasurer, 502 Rialto Building, San Francisco, Cal.

The San Francisco Association of Members of the American Society of Civil Engineers holds regular bi-monthly meetings, with banquet, and weekly informal luncheons. The former are held at 6 P. M., at the Engineers' Club, 57 Post Street, on the third Tuesday of February, April, June, August, October, and December, the last being the Annual Meeting of the Association.

Informal luncheons are held at noon, every Wednesday, at the Engineers' Club, where special tables are reserved for members and guests of the Association.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in San Francisco, and any such member will be gladly welcomed as a guest.

Colorado Association, Organized 1908.

W. C. Huntington, President; A. N. Miller, Secretary-Treasurer, 1400 West Colfax Avenue, Denver, Colo.

The meetings of the Colorado Association of Members of the American Society of Civil Engineers (Denver, Colo.) are held on the second Saturday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary. The meetings are usually preceded by an informal dinner. Members of the American Society of Civil Engineers will be welcomed at these meetings.

Weekly luncheons are held on Wednesday, at 12.30 P. M., at Daniels and Fisher's.

Visiting members are urged to attend the meetings and luncheons.

Atlanta Association, Organized 1912.

V. H. Kriegshaber, President; Howard L. Stillwell, Secretary-Treasurer, 533 Trust Co. of Georgia Bldg., Care, Southeastern Underwriters' Association, Atlanta, Ga.

Informal luncheons are held for members of the Association on the last Monday of each month, at 12.30 P. M., to which visiting members of the American Society of Civil Engineers will be welcomed. The place is not fixed, but this information will be furnished on application to the Secretary.

Baltimore Association, Organized 1914.

H. G. Perring, President, 3206 Carlisle Avenue, Baltimore, Md.

Cleveland Association, Organized 1914.

W. P. Brown, President; George H. Tinker, Secretary-Treasurer, 516 Columbia Building, Cleveland, Ohio.

The regular meetings of the Association are held on the second Wednesday of each month, at 12.15 P. M., in the Rooms of the Electrical League, on the Fourteenth Floor of the Statler Hotel. Luncheon is served at these meetings, and visiting members are invited to attend.

(Abstract of Minutes of Meeting)

January 14th, 1920.—The meeting was called to order at 12.15 P. M.; President W. P. Brown in the chair; George H. Tinker, Secretary; and present, also, members and guests.

The minutes of the meeting of December 10th, 1919, were read and approved.

The report of the Secretary-Treasurer for 1919 was read, and on motion, duly seconded, was accepted and ordered filed.

The Chairman announced the appointment of the following Committees by the Executive Committee: Legislative Committee, Messrs. B. R. Leffler, E. J. Newton, and F. D. Richards; Member of the Joint Gas Committee, Mr. E. B. Thomas; and Director of the Association on the Board of Ohio Technical Societies, Mr. B. R. Leffler.

A communication from the Philadelphia Association relative to the adoption of the report of the Development Committee, was read, but no action was taken.

Relative to a communication from Engineering Council, it was voted, on motion, duly seconded, that the Board of Direction be advised that it is the sense of this Association that the Founder Societies pro-

vide sufficient funds to maintain Engineering Council until such time as a permanent organization is effected.

The Secretary read a communication from the Duluth Association in reference to the nine questions prepared by the Development Committee for submission to the membership. On motion, duly seconded, the Secretary was directed to request the Board of Direction to transmit a copy of its reply to the Duluth Association.

On motion, duly seconded, the Secretary was directed to write to the members of the Cuyahoga Delegation to the State Legislature, advising the passage of the Act to regulate the salaries and employment of County Draftsmen.

Adjourned.

Connecticut Association, Organized 1919.

C. M. Saville, President; R. J. Ross, Secretary, Municipal Building, Hartford, Conn.

The Annual Meeting of the Association is held in April. The Association also holds fortnightly meetings alternating between Hartford and New Haven, Conn. These meetings are informal luncheon gatherings held usually at noon on Saturday, a notice being mailed to each member calling attention to the date, time, place, and subject for discussion. Members are privileged to invite guests regardless of their affiliation as engineers. No set speeches are scheduled, but certain members are asked to be prepared to present the assigned subject and lead in a general discussion.

Detroit Association, Organized 1916.

Lewis M. Gram, President; Dalton R. Wells, Secretary-Treasurer, 624 McKerchey Building, Detroit, Mich.

The regular meetings of the Association are held on the second Friday of December, April, and October, the last being the Annual Meeting.

District of Columbia Association, Organized 1916.

David S. Carll, President; James H. Van Wagenen, Secretary-Treasurer, 719 Fifteenth Street, N. W., Washington, D. C.

(Abstract of Minutes of Meetings)

February 27th, 1920.—A special meeting for the purpose of discussing the Questionnaire Ballot on Development being voted on by the corporate members of the Society, was called to order at Cosmos Club Hall; President David S. Carll in the chair; James H. Van Wagenen, Secretary; and present, also, 48 members.

The minutes of the Annual Meeting of December 29th, 1919, were read and approved.

Mr. Arthur P. Davis, President of the Society, addressed the meeting, discussing in turn each question to be voted on. Messrs. George R. Putnam, D. E. McComb, C. W. Kutz, John H. Hanna, O. C. Merrill, E. C. Barnard, John S. Conway, E. F. Wendt, and W. A. Slater participated in the discussion which followed.

President Davis pointed out the inequality of the method of representation recommended by the Committee on Development by which

Local Associations of 100 members or more were to have one delegate and an additional delegate for each additional 1 000 members or major fraction thereof, while National Associations having 200 members were to have one delegate and an additional delegate for each 2 000 additional members or major fraction thereof. He said no valid reason existed for giving a heavier representation to the Local than to the National Societies. It had been urged that many of the members of the National Societies belong to local societies and would secure their representation in this way, but Mr. Davis said this argument might just as well be turned around by saying that local members were often members of the National Societies and might secure their representation through the latter. Claiming that no valid reason exists for the discrimination proposed, he favored the application of the same rule to both. He introduced the following resolution, which was seconded by Mr. Putnam and carried:

"Resolved: That the District of Columbia Association of Members of the American Society of Civil Engineers is in favor of giving the same basis of representation to all organizations forming the federation of Engineering Societies, whether such organizations are National or local, with a maximum limitation of representatives from any one Society."

Adjourned.

Duluth Association, Organized 1917.

G. A. Taylor, President; Walter G. Zimmermann, Secretary, Wolvin Building, Duluth, Minn.

The regular meetings of the Association are held at noon on the third Monday of each month (usually at the Kitchi Gammi Club), with luncheon, followed by a short business session and the reading of papers. Visiting members of the American Society of Civil Engineers can secure from the Secretary definite information relative to the meetings, at which they will be welcomed. The Annual Meeting is held on the third Monday in May.

Illinois Association, Organized 1916.

A. F. Reichmann, President; W. D. Gerber, Secretary-Treasurer, 913 Chamber of Commerce, Chicago, Ill.

The regular meetings of the Association are held on the second Monday of March, June, September, and December, the last being the Annual Meeting. The hour and place of meetings are not fixed, but this information will be furnished on application to the Secretary.

Iowa Association, Organized 1920.

J. E. Van Liew, President; R. W. Crum, Secretary, Iowa State College, Ames, Iowa.

Louisiana Association, Organized 1914.

A. T. Dusenbury, President; Eugene F. Deléry, Secretary, 602 Sewerage and Water Board Building, New Orleans, La.

The regular meetings of the Association are held at The Cabildo, New Orleans, La., on the first Monday of January, April, July, and October.

(Abstract of Minutes of Meeting)

February 9th, 1920.—The meeting was called to order; President Perrilliat in the chair; Eugene F. Deléry, Secretary; and present, also, members and guests.

On motion, duly seconded, the sum of $150 was appropriated for the National Public Works Association, and it was decided that it was the opinion of those present that the Jones-Reavis Bill be approved and that members of the Association be requested to do all in their power to further this end.

The officers for the ensuing year were elected, as follows: President, A. T. Dusenbury; First Vice-President, Ole K. Olsen; Second Vice-President, A. M. Shaw; Secretary, E. F. Deléry; and Treasurer, W. H. Williams.

On motion, duly seconded, it was decided to try to obtain papers on various subjects from members for presentation at future meetings of the Association.

Adjourned.

Nebraska Association, Organized 1917.

Clark E. Mickey, President; Homer V. Knouse, Secretary-Treasurer, 200 City Hall, Omaha, Nebr.

Regular meetings of the Association are held on the first Saturday of each month, except July and August, and at such places as may be appointed from time to time by the Executive Committee. The Annual Meeting is held in Lincoln, Nebr., on the second Friday in January.

Visiting members of the Society are especially urged to communicate with the Secretary when in the city.

New York Section, Organized 1920.

Robert Ridgway, President; Lewis D. Rights, Secretary, 256 Broadway, New York City.

The Annual Meeting is held in May. The times and places of other meetings are not fixed, but this information will be furnished on application to the Secretary.

(Abstract of Minutes of Meeting)

February 18th, 1920.—The first meeting of the Section, for organization, was called to order at the Engineering Societies Building. Present, 20 members.

Messrs. J. Waldo Smith and Clifford M. Holland were chosen temporary President and temporary Secretary, respectively. The object of the meeting was explained. Messrs. Walter E. Spear, Arthur S. Tuttle and George L. Lucas were appointed a committee to nominate officers.

Resolutions were passed declaring the Section formed, adopting the form of Constitution approved January 20th, 1920, by the Board of Direction and authorizing a general call to members of District No. 1 to join the Section.

The report of the Nominating Committee was presented and the following officers were elected, to serve until the Annual Meeting in May: President, Robert Ridgway; First Vice-President, J. Waldo Smith; Second Vice-President, Allen Hazen; Secretary, Lewis D.

Rights; Treasurer, Frederick C. Noble; and Directors, Otis E. Hovey and R. S. Buck.

On motion of Mr. S. N. Castle, the President was authorized to appoint representatives to participate in a joint conference of representatives of other local sections of National engineering and technical societies and local engineering societies. On motion of Mr. Hovey, the number of representatives was fixed at three.

The meeting was also addressed by Messrs. Daniel Bontecou, Arthur S. Tuttle, Herbert C. Keith, and Charles Hansel.

Adjourned.

Northwestern Association, Organized 1914.

Ralph D. Thomas, President; W. N. Jones, Secretary, City Engineer's Office, City Hall, Minneapolis, Minn.

The meetings of the Association are held bi-monthly, alternating between St. Paul and Minneapolis, on the third Friday of each month. Information as to the time and place of such meetings will be furnished on application to the Secretary.

Philadelphia Association, Organized 1913.

S. M. Swaab, President; Henry T. Shelley, Secretary, 416 City Hall, Philadelphia, Pa.

The regular meetings of the Association are held at the Engineers' Club of Philadelphia, 1317 Spruce Street, on the first Monday in January, April, and October, the last being the Annual Meeting. Special meetings will also be held during the winter, in order to provide an opportunity for members to take a more active part in the work of the Association.

(Abstract of Minutes of Meeting)

March 1st, 1920.—A special meeting was called to order at the Engineers' Club; President S. M. Swaab in the chair; H. T. Shelley, Secretary; and present, also, 40 members and guests.

The President introduced Maj. Walter Loring Webb as the speaker of the evening. Maj. Webb read an interesting paper on "The Work of the Valuation Section of the Renting, Requisitions and Claims Service of the United States Army in France." He was given an enthusiastic greeting from the members and was tendered a vote of thanks for his appearance before the Association.

Mr. Richard L. Humphrey spoke on the questionnaire submitted to letter ballot and of the sentiment in favor of the proposed development of the Society in different sections of the country. The subject was very generally discussed by the members present.

Adjourned.

Pittsburgh Association, Organized 1917.

Morris Knowles, President; Nathan Schein, Secretary-Treasurer, 426 City-County Building, Pittsburgh, Pa.

The Annual Meeting of the Association is held on the first Monday in October. The time and place of other meetings are not fixed, but this information will be furnished on application to the Secretary.

(Abstract of Minutes of Meeting)

February 27th, 1920.—The Special Meeting was called to order at 8 P. M., in the Union Arcade Auditorium; Vice-President N. S. Sprague in the chair; Nathan Schein, Secretary; and present, also, 60 members.

Chairman Sprague announced the purpose of this Special Meeting, namely, "To Consider the Secretaryship and Important Questions of Policy and also the Report of the Development Committee of the American Society of Civil Engineers".

The minutes of the previous meeting were read and approved.

The Secretary read all communications that had been received by him since the last meeting, which were ordered to be received and filed.

Mr. Richard L. Humphrey, of Philadelphia, Pa., addressed the meeting at length on the report of the Development Committee and also on the proposed federation of all engineering societies.

Mr. Richard Khuen, Chairman of the Internal Relations Committee, gave an informal talk on the progress of his Committee on the affiliation of engineers' societies in Pittsburgh.

On motion, duly seconded, this Committee on Local Affiliations was authorized to represent this Association at a conference relative to the organization of all engineering societies of the United States, which was authorized at the Annual Meeting of the Society.

On motion, duly seconded, a general discussion of Mr. Humphrey's address was ordered.

Mr. C. M. Reppert presented the following resolution:

"*Whereas,* The report of the Development Committee was endorsed by the Association at a previous meeting and approved at the Annual Meeting of the Society, and as the fundamental elements of the Development Report have been submitted in a questionnaire ballot by letter to the membership by the Board of Direction,

"*Therefore, be it Resolved,* That it is the sense of this Association that Questions "A", 1 to 3, inclusive, "External Relations," and Questions "B", 1 to 6, inclusive, "Internal Relations," should be answered in the affirmative, and Question "B"-7 in the negative; and that the President is hereby authorized and directed to appoint a committee of seven members to conduct a campaign to arouse interest and impress upon the membership of the Society in the Pittsburgh District, the importance of so voting upon the vital questions submitted in the ballot to insure the accomplishment of the recommendations of the Development Committee."

It was moved and seconded that this resolution be adopted.

The resolution was discussed by Messrs. George S. Davison, J..N. Chester, Richard Khuen, and Richard L. Humphrey.

The Secretary read communications from Director Edward E. Wall, of St. Louis, Mo., and Col. H. S. Crocker, relative to the Secretaryship of the American Society of Civil Engineers.

On motion, duly seconded, these communications were received and ordered to be filed.

Adjourned.

Portland (Ore.) Association, Organized 1913.

J. C. Stevens, President; C. P. Keyser, Secretary, 318 City Hall, Portland, Ore.

The Annual Meeting of the Association is held on the second Friday in January. Other meetings are called by the President and are usually convened on Friday evenings. The place is not fixed, but this information may be obtained on application to the Secretary. All members of the American Society of Civil Engineers are cordially invited to attend the meetings.

(Abstract of Minutes of Meeting)

January 9th, 1920.—The Annual Meeting was called to order at 8 P. M., at the University Club; President Thomson in the chair; C. P. Keyser, Secretary; and present, also, 36 members and 3 guests.

The minutes of the meeting of September 26th, 1919, were read and approved.

On motion, duly seconded, the bills were ordered to be carried over to the next meeting, pending the Treasurer's report.

Reporting back from the Conference on Co-ordination of Local Technical Organizations, President Thomson read a draft of a proposed Constitution for the Oregon Technical Council, which, on motion, duly seconded, was adopted, as amended, section by section. The subject was discussed by Messrs. Reed, Edmondstone, Dieck, Plummer, Mason, Stevens, Hoffmark, Purcell, and Henny.

In reference to the use of a union label on working drawings, the Secretary presented a resolution which he stated he had prepared and referred to the Secretary of the Society, who, in turn, had referred the whole matter to Engineering Council. A letter from the Secretary of Engineering Council was read, asking for further information on the subject, and stating that the matter would be presented at the meeting of the Council on December 18th, 1919. Nothing further had developed and, on motion, duly seconded, the question was laid on the table.

Mr. R. F. Hoffmark, Chairman of the Committee on Resolution favoring the Jones-Reavis Bill, offered the following resolution which, on motion, duly seconded, was adopted:

> "*Whereas,* The Portland Chapter of the American Society of Civil Engineers believes that the passage of the Jones-Reavis Bill for the creation of a Department of Public Works would greatly add to the efficiency of Government activities along technical and scientific lines and that it would terminate the costly and antiquated methods of division of these activities over numerous bureaus scattered through nearly all the departments of our Government, it is
>
> "*Resolved,* That we urge upon our representatives in Congress that they give this measure their energetic support and that a copy of this resolution be mailed to each member of the Oregon Congressional delegation and to the public press."

Mr. D. C. Henny, Chairman of the Oregon State Committee on National Department of Public Works, outlined the work of that Committee and stated that, through co-operation with Spokane and Seattle, Mr. J. C. Ralston had been sent as a delegate from District No. 12 to

the Conference to be held in Washington, D. C., on January 13th, 1920. On motion, duly seconded, it was voted that the Association concur in the nomination of Mr. Ralston as its delegate to the Conference.

In reference to the questionnaire report, Mr. G. C. Mason reported that it had been filed with the Committee on Development of the Society, and was in *statu quo* awaiting the action of the Society on the Development Committee's report.

On motion, duly seconded, the Association subscribed $5.00 for membership in the Oregon Irrigation Congress.

On motion, duly seconded, the Association approved the report of the Development Committee, and the Secretary was instructed to advise the Board of Direction that the Association strongly favors action on the report.

Mr. G. B. Hegardt called attention to the need for funds to complete the Engineering Laboratory at the Oregon Agricultural College, and, on motion, duly seconded, the Secretary was instructed to draft and transmit a resolution favoring such effort.

The Secretary read the Annual Report of the officers. Owing to the illness of the Treasurer, the financial statement was omitted, and, on motion, duly seconded, the Secretary was instructed not to file the report until a subsequent meeting.

The Secretary presented a communication from Mr. J. C. Stevens in which he invited all members who were members of the Chamber of Commerce to lunch there at a table which had been reserved for technical men. Mr. M. E. Reed called the attention of the members to the hospitality of the University Club, suggesting that members lunch there, and, on motion, duly seconded, the Secretary was instructed to convey an expression of appreciation by the Association to the officers of the University Club for courtesies extended to the Association.

The Secretary read a communication from Mr. Harry Hawgood, in which he requested an expression of preference of cities in District No. 11 as a place for holding the Annual Convention of the Society. President Thomson directed the Secretary to reply that the Association would prefer Los Angeles, Cal., to any other city in District No. 11.

President Thomson appointed Messrs. W. G. Brown and P. H. Dater as Tellers in the annual election of officers, and, on their report, the following officers were declared elected: President, J. C. Stevens; Second Vice-President, F. M. Randlett; Treasurer, C. J. McGonigle; and Secretary, C. P. Keyser.

Mr. Mason addressed the meeting on "Some Aspects of Industrial Development", and was followed by Mr. Robert G. Dieck on "Municipal and Harbor Improvements with Particular Reference to the Development of Industrial Sites".

Adjourned.

St. Louis Association, Organized 1888 (Constitution Approved by Board, 1914).

Edward E. Wall, President; C. W. S. Sammelman, Secretary-Treasurer, 300 City Hall, St. Louis, Mo.

The Annual Meeting of the Association, for the election of officers and for the transaction of business, is held on the fourth Monday in November. Two meetings each year, for the presentation and discus-

sion of technical papers, are held in the Auditorium of the Engineers' Club of St. Louis and are open to members of the Associated Societies. Other "get-together" meetings are held regularly for dinner or luncheon on the fourth Monday of each month except July, August, and November.

(Abstract of Minutes of Meetings)

November 24, 1919.—The meeting was called to order at 12.15 P. M., at the American Hotel; President J. A. Ockerson, in the chair; S. Sammelman, Secretary; and present, also, 21 members and guests.

The minutes of the previous meeting were read and approved.

A letter from C. T. Chenery, Secretary of the Engineers', Architects', and Constructors' Conference on National Public Works, was read and referred to Mr. Baxter L. Brown.

The Secretary read a communication from Mr. Harry Hawgood, Director from District No. 11, requesting an expression of the Association's preference in regard to holding the Annual Convention of the Society at Los Angeles, Cal., or Houston, Tex. A vote of those present showed 13 favoring Houston, 4 favoring Los Angeles, and 6 not voting.

A letter soliciting funds for the support of Engineering Council was read, and, on motion, duly seconded, it was decided that Council be supported and Secretary Flinn be notified of the action of the Association.

The report of the Secretary was read and approved. The report of the Treasurer was presented, and, on motion, duly seconded, he was instructed to submit it to the Executive Committee to be audited.

The Nominating Committee, consisting of Messrs. H. P. Taussig, W. S. Dawley, and W. E. Rolfe, reported on nominees for officers of the Association for 1920, as follows: President, Edward E. Wall; Vice-Presidents, J. W. Woermann and E. B. Fay; Secretary-Treasurer, S. Sammelman; and as representatives of the Association on the Joint Council of the Associated Engineering Societies, Messrs. F. G. Jonah and W. J. Burton.

On motion, duly seconded, it was ordered that further nominations be closed, and that the Secretary be instructed to cast a ballot declaring those designated by the Nominating Committee to be elected for the ensuing year.

President Ockerson turned over the chair to President-elect Wall, and a rising vote of thanks was tendered Mr. Ockerson for the efficient and effective work he had accomplished during his term of office as President.

President Wall reported on the proceedings of the meeting of the Board of Direction of the Society held in New York City.

On motion, duly seconded, it was ordered that the meetings of the Association be continued on the fourth Monday of each month, and that the decision as to whether they be noonday or evening meetings be left to the judgment of the President.

Adjourned.

December 15th, 1919.—The meeting was called to order at the American Hotel; President Edward E. Wall in the chair; S. Sammelman, Secretary; and present, also, 25 members and guests.

The minutes of the previous meeting were read and approved.

The President presented the report of the Special Committee appointed by the Board of Direction to study and review the report of the Development Committee. After a lengthy discussion of Part 1 of the report, and Appendix A, it was the opinion of the members present that the scheme for a Joint Engineering Council, outlined in Appendix A, was in no way preferable to the proposition of the Joint Conference Committee as set forth under the head of "National Engineering Organization" on page 12 of the report of the Development Committee.

President Wall presented a scheme for a National Engineering Organization following out the ideas of the Joint Conference Committee, but modifying its recommendations as to the basis of representation. This proposition met with the unanimous approval of the members present, and it was duly moved, seconded, and carried that it was the sense of the meeting that the modified scheme for a National Engineering Organization as presented by President Wall was preferable to anything considered so far, and that this scheme was approved and recommended to the Committee for its consideration.

The remainder of the Alvord Committee's report was considered, and, in the main, was satisfactory to the meeting, although there was considerable discussion over the question of doing away with the resident membership and raising the dues as much as $10.00 per member. It was finally decided to leave the matter open until more details were submitted through the Board of Direction as to the manner in which the increased revenue would be expended.

The meeting then took up the report of the Development Committee, commencing with Division D. The general conclusion as to the definition of "Engineering" was that such a definition should be left very general and could not be made specific; also that an effort to define an engineer so that he could be easily segregated from artisans and mechanics was exceedingly difficult, and in any event was not necessary for the purpose of drawing up a satisfactory statute for either the licensing or registration of engineers. The recommendations of the Committee on "Engineering Education" and "Arbitration and Expert Testimony" were approved by the meeting.

Adjourned.

San Diego Association, Organized 1915.

W. C. Earle, President; R. C. Wueste, Secretary-Treasurer, Bonita, Cal.

Seattle Association, Organized 1913.

John L. Hall, President; Bertram D. Dean, Secretary, 1711 Ravenna Boulevard, Seattle, Wash.

The regular meetings of the Association, with luncheon, are held at the Engineers' Club, Arctic Building, Third Avenue and Cherry Street, at 12.15 P. M., on the last Monday of each month. Informal luncheons are also held at 12.15 P. M., every Monday at the Engineers' Club.

Special evening meetings are held from time to time for the purpose of discussing important topics, and information concerning these meet-

ings may be had by addressing the Secretary. All members in any grade of the American Society of Civil Engineers are cordially invited to attend the meetings when in the vicinity, and, if located in this District for any length of time, their membership in the Association will be appreciated.

(Abstract of Minutes of Meeting)

February 9th, 1920.—The Annual Meeting was called to order at 8 P. M., at the Engineers' Club; President L. M. Grant, in the chair; Glenville A. Collins, Secretary; and present, also, 30 members and guests.

The minutes of the last meeting were approved, as read.

The Secretary read the Annual Reports of the Secretary and Treasurer, and also a letter from Mr. J. C. Ralston giving a detailed report on his activities in Washington, D. C., on behalf of the Association, regarding the Department of National Public Works.

On motion, duly seconded, and passed unanimously, the Secretary was instructed to thank Mr. Ralston on behalf of the Association for his able report of work accomplished.

Officers for the ensuing year were elected as follows: John L. Hall, President; Carl H. Reeves, Vice-President; and Bertram D. Dean, Secretary-Treasurer.

After the installation of the new officers, addresses were given as follows: By Col. J. A. Woodruff, Engineer Corps, U. S. A., on "The Work of the Division of Construction and Forestry in France"; by Prof. C. C. More, of the University of Washington, on "The Engineers' School at Camp A. A. Humphreys"; and by A. H. Dimock, City Engineer, on "The Skagit River Power Development".

Adjourned.

Southern California Association, Organized 1914.

W. K. Barnard, President; Floyd G. Dessery, Secretary, 514 Central Building, Los Angeles, Cal.

The Southern California Association of Members of the American Society of Civil Engineers (Los Angeles, Cal.) holds regular monthly meetings on the second Wednesday of each month, the December meeting being the Annual Meeting.

Informal luncheons in connection with the Joint Technical Societies of Los Angeles are held at 12.15 P. M., every Thursday at the Broadway Department Store Café.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in Los Angeles, and any such member will be gladly welcomed as a guest at any of the meetings or luncheons.

(Abstract of Minutes of Meeting)

February 11th, 1920.—The meeting was called to order at 7.50 P. M., at the Jonathan Club; President W. K. Barnard in the chair; F. G. Dessery, Secretary; and present, also, 32 members and 9 guests.

The minutes of the January meeting were approved, as written.

President Barnard announced the death of Andrew Christian Hansen, a member of the Association and City Engineer of Los Angeles, Cal., and thereupon a committee consisting of Messrs. William Mulholland, E. T. Wheeler, and E. R. Bowen, presented the following

resolution, which was adopted unanimously and ordered to be transmitted to Mr. Hansen's widow:

> *"Whereas,* it has pleased the Almighty to remove from our midst our distinguished and beloved brother engineer and esteemed friend, Andrew Christian Hansen, and
>
> *"Whereas,* Andrew Christian Hansen has especially distinguished himself by his valued public work rendered to the City of Los Angeles, and by his kindly, courteous, and manly attitude toward his fellow-men,
>
> *"Therefore, be it Resolved,* that we hereby express our deep sense of the great loss to this Association, and to the community he so well served.
>
> *"We further* express and tender our sincere sympathy to his bereaved family, and implore the all-wise Almighty, in whose bosom our departed brother rests, to sustain and comfort these relatives in this, the hour of their affliction."

A letter from the Hon. Meredith P. Snyder, Mayor of Los Angeles, transmitting to the Association a copy of a report on Railroad Grade Crossing and Terminal Investigation in Los Angeles, was read, and, after considerable discussion, it was determined to be the sense of the meeting that this report be referred to a special committee to be appointed by the Board of Directors, to report to the Association at its next meeting. The Board of Directors appointed the following to serve on the Special Committee: Messrs. Reed, Anderson, and Dennis.

The Secretary read a letter and resolution (dated January 29th, 1920) from the St. Louis Association, criticising the action of the Board of Direction at the 67th Annual Meeting relative to the appointment of Dr. Charles Warren Hunt as Secretary Emeritus. After explanations by Director Hawgood who had attended the meeting at which this action was taken, the matter appeared in an entirely different light, the final vote approving Dr. Hunt's appointment being 16 to 10 and not 15 to 13 as stated in the communication from the St. Louis Association.

The Secretary read a letter and a copy of a resolution adopted by the Joint Council of the Engineering Societies of San Francisco (January 27th, 1920), inviting the Association to endorse Mr. Herbert C. Hoover for President of the United States. After considerable discussion, on motion by Maj. Leeds, with two dissenting votes, the resolution from the Joint Council of the Engineering Societies of San Francisco was ordered to be modified to comply with the requirements of the Association and was endorsed as the sentiment of the meeting.

President Barnard introduced Mr. Roy V. Reppy, Chief Counsel of the Southern California Edison Company, and formerly in charge of flood control matters in the County Counsel's office, who presented a paper on "Political and Legal Aspects of Flood Control in Los Angeles County", and Mr. W. H. Code read a paper on "Financial Features and Executive Organizations Provided in the California Conservancy Act". These two papers threw much light on the legal and executive sides of the existing Flood Control Acts.

Director Hawgood made an extensive report relative to the 67th Annual Meeting of the Society, and explained the action of the Board

of Direction in holding the next Annual Convention in Houston, Tex., as being caused by the desire to stimulate membership in the South. He also advised that the Board of Direction will meet in Los Angeles in July, 1920, the exact date to be decided later.

Mr. Hawgood also discussed the progress made on the report of the Committee on Development, advising that within a short time, a questionnaire on the report would be submitted to the membership for ballot. The discussion of the report of the Committee on Development, which ensued, brought out the necessity of individual action and voting, in order to overcome objections to it. The necessity for individual effort as well as teamwork was pointed out by Mr. G. G. Anderson, and, on motion, duly seconded, it was determined that, at the next meeting of the Association, precedence in the order of business be given to a consideration of the proposed questionnaire, and the report of the Committee on Development in general, followed by discussions of Flood Control papers, if such papers were offered.

Owing to the lateness of the hour, a lengthy communication from Mr. Samuel Storrow on the lack of proper compensation of naval officers, on motion, duly seconded, was laid on the table.

Adjourned.

Spokane Association, Organized 1914.

Alfred D. Butler, President; Charles E. Davis, Secretary-Treasurer, 401 City Hall, Spokane, Wash.

The regular meetings of the Association are held on the second Friday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary.

Visiting members are invited to attend the meetings.

Texas Association, Organized 1913.

Hans Helland, President; E. N. Noyes, Secretary, Deere Building, Dallas, Tex.

Utah Association, Organized 1916.

A. B. Villadsen, President, 304 Dooly Bldg., Salt Lake City, Utah.

The Annual Meeting of the Association is held on the first Wednesday in April. The time of other meetings is not fixed, but this information will be furnished on application to the President.

PRIVILEGES OF ENGINEERING SOCIETIES EXTENDED TO MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

Members of the American Society of Civil Engineers will be welcome in the Reading Rooms and at the meetings of many engineering societies in all parts of the world. A list of such societies will be found on pages 42 and 43 of the Year Book of the Society for 1920.

Upon request by its Board of Trustees, the Engineering Societies of Wisconsin, Madison, Wis., is to be added to the above-mentioned list, and its members are accorded the usual courtesies and privileges of the Headquarters of the Society.

NEW BOOKS*

(From February 1st to February 28th, 1920)

The statements made in these notices are taken from the books themselves, and this Society is not responsible for them.

DONATIONS TO ENGINEERING SOCIETIES LIBRARY

EFFICIENT BOILER MANAGEMENT:

With Notes on the Operation of Reheating Furnaces. By Chas. F. Wade. Lond. and N. Y., Longmans, Green & Co., 1919. 14 + 266 pp., illus., tables, 9 x 6 in., cloth. $4.50.

The author of this work endeavors to explain, in their proper sequence, the elementary scientific principles underlying the various subjects combined in boiler management and the systematic practical application of these principles to obtain the greatest efficiency. The book is intended to fill the gap between the treatises on the chemistry of combustion, etc., in which practical applications are omitted, and the practical text-books on boiler plants, which give little attention to the fundamental principles governing their operation.

ENGINEERING MACHINE TOOLS AND PROCESSES:

A Text-Book for Engineers, Apprentices, and Students in Technical Institutes, Trade Schools, and Continuation Classes. By Arthur G. Robson. Lond. and N. Y., Longmans, Green & Co., 1919. 307 pp., illus., tables, 9 x 6 in., cloth. $4.00.

This work presents a course in the systematic study of machine work and machine tools which is practical rather than theoretical in character. The methods and machines described are those used in British shops, and the volume is intended for use in that country.

AMERICAN GAS WORKS PRACTICE:

Standard Practical Methods in Gas Fitting, Distribution, and Works Management. By George Wherle. N. Y., Progressive Age Publishing Co., 1919. 741 pp., illus., tables, 8 x 6 in., cloth. $4.00.

This work is intended as a general reference book on gas-works practice in the United States, with special emphasis on gas-fitting practice. Approximately one-half of the book is devoted to the latter topic, and the methods used in street and house distribution, standards adopted, etc., are fully described.

CHILTON AUTOMOBILE DIRECTORY, JANUARY, 1920.

Published Quarterly. Phila., Chilton Co. 1 000 pp., 10 x 6 in., cloth. $5.00.

This quarterly directory of the automobile industry contains a classified list of the American manufacturers of passenger and commercial motor cars, automobile equipment, parts, and machinery for their manufacture. The arrangement is alphabetical, and the classification is quite detailed. In addition, the book contains a directory of automobile trade associations, a table of the serial numbers of American motor cars, the standards of the Society of Automotive Engineers, and various engineering tables.

* Unless otherwise specified, books in this list have been donated by the publishers

MANUFACTURE AND USES OF ALLOY STEELS.

By Henry D. Hibbard. (Wiley Engineering Series.) N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1919. 14 + 96 pp., 9 x 6 in., cloth. $1.25.

In this monograph, the author has tried to give briefly information of present value relating to the manufacture and uses of the various commercial alloy steels, with the hope of stimulating the demand for them and extending their practical use. The steels considered are tungsten, chromium, manganese, nickel, silicon, nickel-chromium, chromium-vanadium, and high-speed tool steels. Bibliographies are given for each.

TECHNICAL METHODS OF ORE ANALYSIS.

By Albert H. Low. 8th edition. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1919. 388 pp., 21 illus., tables, 9 x 6 in., cloth. $3.25.

This manual is intended primarily for the technical chemist, for whom it provides a collection of tested short technical methods adapted to the cases most likely to be met in practice, which are described with minute detail. The present edition has been thoroughly revised, and a number of new methods have been added.

PROSPECTING FOR OIL AND GAS.

By L. S. Panyity. N. Y., John Wiley & Sons, Inc., 1920. 249 pp., 123 fig., 28 tab., 8 x 5 in., cloth. $3.25.

This work is written for practical oil men and the general public interested in oil investments. It is intended to provide an account of the tools and methods used by scientific prospectors for oil and gas which will enable those without special knowledge of geology to realize what may be expected of the geologist, to analyze a geological report, and to pass judgment on its merits. The book is based on a study of the literature and the practical experience of the author, who is a member of the American Institute of Mining and Metallurgical Engineers.

THE LABOR MARKET.

By Don D. Lescohier. N. Y., The Macmillan Co., 1919. 338 pp., 9 charts, 8 x 5 in., cloth. $2.25.

This work is intended for general readers, employers, legislators, employment officials, college teachers, and students of the employment and labor problem. The factors of supply and demand, labor market machinery, and special employment problems are discussed. The author advocates National control of the problem of employment. An extensive bibliography is included.

FATIGUE STUDY:

The Elimination of Humanity's Greatest Unnecessary Waste, a First Step in Motion Study. By Frank B. Gilbreth and Lillian M. Gilbreth. N. Y., The Macmillan Co., 1919. 175 pp., plates, 8 x 5 in., cloth. $1.50.

This book is a study of fatigue in workmen and its prevention. It aims to determine what fatigue results from various types of work, how unnecessary fatigue may be eliminated, and necessary fatigue reduced to a minimum. Numerous appliances and methods are described.

APPLIED MOTION STUDY:

A Collection of Papers on the Efficient Method to Industrial Preparedness. By Frank B. Gilbreth and L. M. Gilbreth. N. Y., The Macmillan Co., 1919. 220 pp., plates, 1 chart, 8 x 5 in., cloth. $1.50.

This collection describes the application of motion study in various fields of activity and the methods by which it is applied. It also gives the results obtained in various cases and suggests the fields in which it may be used with benefit.

TIME STUDIES FOR RATE SETTING.

By Dwight V. Merrick, with a Foreword by Carl G. Barth. N. Y., The Engineering Magazine Company, 1919. 366 pp., 137 fig., 9 x 6 in., leather. $6.00.

The author presents in amplified form the principles covering time study for rate setting, describes various mechanisms that have been found helpful in making and using such studies, and presents some details of practice. An example of the application of time studies to a line of machine tools is included, together with detailed times for a number of other kinds of work.

SAFETY FUNDAMENTALS:

Lectures Given by the Safety Institute of America (Maintaining The American Museum of Safety). N. Y., Safety Institute of America, 1920. 228 pp., illus., plates, 8 x 5 in., cloth. $2.00.

These lectures were delivered during 1919 before an audience of factory inspectors employed by the City of New York, the States of New York and New Jersey, and insurance companies in and near New York. They are intended to enlarge the knowledge and increase the experience of inspectors with respect to the various fundamentals that affect the mind and body of the workman. Contents: The Body Which Gets Hurt; The Injured Body and Its Treatment: (*a*), Protective Clothing for Men; (*b*), Suitable Work Garments for Women in Industry; Safe Heads and Good Eyes; Guarding Machinery; Arrangement of Machinery and Working Places; Heating and Ventilation; Illumination; Nature's Forces For and Against Workmen; Safety Education and Shop Organization.

ENGINEERING EDUCATION:

Essays for English, Selected and Edited by Ray Palmer Baker. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1919. 185 pp., 8 x 5 in., cloth. $1.25.

Under these headings the Professor of English in the Rensselaer Polytechnic Institute has grouped fourteen essays, written by prominent American and English engineers during the past decade, which deal with various aspects of engineering education. The book is intended for use in elementary courses in exposition in schools of engineering. Contents: The Origins of Engineering Education; The Types of Engineering Education; The Bases of Engineering Education.

INORGANIC CHEMICAL SYNONYMS

And Other Useful Chemical Data. By Elton R. Darling. N. Y., D. Van Nostrand Co., 1919. 100 pp., 7 x 4 in., cloth. $1.00.

The author has collected the various synonyms that have been used in scientific and trade literature to designate the chemicals in common use and has arranged them so that the substance in question can be accurately identified.

PRINTING TRADES BLUE BOOK:

National Edition, 1920. Chicago, Edited and Published by A. F. Lewis & Co. 287 pp., 8 x 6 in., cloth.

This directory contains the names and addresses of manufacturers of printers' and bookbinders' supplies and equipment, arranged by firm names and lines. It is intended for makers and users of printed matter.

MUNICIPAL ENGINEERING PRACTICE.

By A. Prescott Folwell. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1916. 422 pp., illus., plate, 1 table, 1 map, 9 x 6 in., cloth. $3.50.

The author of this volume has tried to provide a text-book treating of all those matters which enter into the work of a city engineer, with the exception of sewerage, water supply, and street paving. City plans, street details, bridges and waterways, city surveying, street lights, signs and numbers, street cleaning and sprinkling, waste disposal, markets, comfort stations, baths, parks, cemeteries, and shade trees are discussed at greater or less length.

PARKS AND PARK ENGINEERING.

By William T. Lyle. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1916. 130 pp., illus., plates, 1 map, 9 x 6 in., cloth. $1.25.

This book is prepared for the benefit of inexperienced engineers, but will also, the author hopes, be useful to members of newly formed park associations and commissions. Contents: Desirability and Acquisition of Parks; Lands and Surveys; Design; Labor and Contracts; Construction.

MODERN ROADS.

By H. Percy Boulnois. Lond., Edward Arnold, 1919. 302 pp., 13 plates, figures, charts, tables, 8 x 5 in., cloth. $5.75.

This book is intended as a comprehensive survey of the present status of road construction and maintenance in Great Britain. Water-bound macadam roads, tarred, concrete, and bituminous roads and pavements are included, together with chapters on bituminous carpets, waves and corrugations, and slippery streets.

HIGHWAY INSPECTORS' HANDBOOK.

By Prévost Hubbard. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1919. 372 pp., 55 illus., diagrams, tables, 7 x 4 in., flexible cloth. $2.50.

The author has endeavored to present most of the important details of highway construction and maintenance, as briefly as possible, in such form as to be quickly available to the inspector who wishes to be told what to do rather than what others have done under similar circumstances. Considerable explanatory matter has been included, and diagrams have been used freely to present data in convenient form for field use. The volume is of convenient size for the pocket.

MEMBERSHIP

(From February 7th to March 4th, 1920)

ADDITIONS

MEMBERS		Date of Membership.
BELL, HARRY WALTON. Cons. Engr., Montrose, Miss.	Assoc. M.	Nov. 12, 1913
	M.	Oct. 15, 1920
CAMPBELL, CARROLL ALFRED. Director of Public Works, City of Middletown, Box 758, Middletown, Conn.		Jan. 19, 1920
COLE, ERNEST DELEVAN. Asst. Engr., Empire Gas & Fuel Co., Bartlesville, Okla.	Jun.	Oct. 31, 1911
	Assoc. M.	Feb. 4, 1913
	M.	Oct. 15, 1919
EMORY, LLOYD TILGHMAN. Civ., Chemical, and Industrial Engr. (Emory & Eisenbrey), 919 Harrison Bldg., Philadelphia, Pa.	Jun.	Oct. 5, 1909
	Assoc. M.	April 2, 1912
	M.	Jan. 20, 1920
FORD, HOWARD CARLTON. 1356 Newton St., Denver, Colo.	Jun.	Sept. 1, 1908
	Assoc. M.	May 31, 1910
	M.	Jan. 20, 1920
FOUNTAIN, THOMAS LILLY. Agricultural and Mech. Coll., College Station, Tex.	Jun.	April 2, 1907
	Assoc. M.	April 6, 1909
	M.	Oct. 15, 1919
KNOWLTON, LYNN ORLANDO. Archt. (Bass, Knowlton & Graham), 801 Hume Mansur Bldg., Indianapolis, Ind.		Jan. 19, 1920
LENDERINK, ANDREW. City Engr. (Res., 632 Summer St.), Kalamazoo, Mich.	Assoc. M.	Oct. 1, 1912
	M.	Jan. 20, 1920
MANDIGO, CLARK ROGERS. Chf. Engr., Western Paving Brick Mfrs. Assoc., 317 Dwight Bldg. (Res., 3745 Flora Ave.), Kansas City, Mo.	Assoc. M.	Sept. 3, 1912
	M.	Jan. 20, 1920
SALISBURY, ALFRED JAMES, JR. Cons. Hydr. Engr., 406 Mortgage Guarantee Bldg., Los Angeles, Cal.	Assoc. M.	Mar. 14, 1916
	M.	Jan. 20, 1920
SHEIBLEY, EDWARD GWYN. San. Engr. and Mgr. (Private Practice), Care, University Club, Los Angeles, Cal.	Assoc. M.	Mar. 14, 1916
	M.	Jan. 20, 1920
STEVENS, CHARLES HENRY. Head Draftsman, Dept. of City Transit, 1211 Chestnut St. (Res., 5918 North Park Ave.), Philadelphia, Pa.	Assoc. M.	May 6, 1914
	M.	Jan. 20, 1920
TURNER, ARTHUR JOHN. Chf. Engr., Columbia Basin Survey Comm., 2203 Jackson Ave., Spokane, Wash.	Assoc. M.	Mar. 2, 1915
	M.	Jan. 20, 1920
WEAKLEY, FRANK MERRILL. Gen. Contr., 315 North St., Portsmouth, Va.		Jan. 19, 1920
WYSE, FREDERICK CALHOUN. City Engr., Columbia, S. C.	Assoc. M.	July 2, 1913
	M.	Jan. 20, 1920

ASSOCIATE MEMBERS

		Date of Membership.
ALVAREZ, ARTHUR CARL. Associate Prof. of Civ. Eng., Univ. of California, 1909 Dwight Way, Berkeley, Cal....		Jan. 19, 1920
ASHKINS, NATHAN THOMAS. Care, J. B. Carson, 1233 Elden Ave., Los Angeles, Cal.	Jun. Assoc. M.	Jan. 15, 1917 Jan. 19, 1920
BAKER, DONALD MCCORD. Engr., State Water Comm., 632 Call Bldg., San Francisco, Cal.	Jun. Assoc. M.	Dec. 3, 1913 Jan. 19, 1920
BARRY, EDMUND JOSEPH. Maj., Engrs., U. S. A.; Const. Q. M., Fort Leavenworth, Kans.	Assoc. Assoc. M.	Oct. 8, 1918 Jan. 20, 1920
BATEMAN, JOHN HENRY. Asst. Prof. of Civ. Eng., Univ. of Michigan; Testing Engr., Michigan State Highway Dept., Care, Highway Laboratory, Univ. of Michigan, Ann Arbor, Mich.		Jan. 20, 1920
BEHNEMAN, STANLEY ELGIN CLINTON. Asst. Engr., United Railroads of San Francisco, 4667 Eighteenth St., San Francisco, Cal.		Oct. 14, 1919
BOLIN, HARRY WILLIAM. Engr., H. J. Brunnier, 312 Sharon Bldg., San Francisco, Cal.	Jun. Assoc. M.	May 6, 1914 Jan. 19, 1920
BUCK, BERTIE HARRISON. Chf. Engr., Great Southern Lumber Co.; Chf. Engr., Bogalusa Paper Co., Box 56, Bogalusa, La.		Jan. 19, 1920
COBURN, CLARENCE ALONZO. Engr. and Contr. (Coburn & Co.), St. George's Bldg., Hongkong, China.		Jan. 20, 1920
CONWAY, CLARENCE DEXTER. Supt. and Engr., Los Molinos Land Co., Los Molinos, Cal.	Jun. Assoc. M.	Nov. 28, 1916 Jan. 19, 1920
DUGAN, CHARLES BEDARD. 202 Hartman Bldg., Columbus, Ohio		Jan. 19, 1920
FORBES, HYDE. With Lindsay-Strathmore Irrig. Dist., Lindsay, Cal.	Jun. Assoc. M.	Oct. 10, 1916 Jan. 19, 1920
GRUNDEL, IRVING GEORGE. Supt., Avila Refinery, Union Oil Co. of California, Avila, Cal.		Jan. 19, 1920
HANNAMAN, DONALD ARMSTRONG. 906 North Division St., Salisbury, Md.		Nov. 25, 1919
HOLLAND, ARTHUR FRANCIS. Care, the H. Koppers Co., Const. Dept., Union Arcade Bldg., Pittsburgh, Pa.		Oct. 14, 1919
HOLST-GRUBBE, TRYGVE. Care, Gunvald Aus Co., 244 Madison Ave., New York City.		Jan. 19, 1920
HOWELL, LESLIE DILLON. Valuation Dept., C., M. & St. P. R. R., 509 Le Moyne Bldg., Chicago, Ill.		Jan. 19, 1920
KENNEY, HARRY WILLEY. Design Draftsman and Chf. of Squad, Bureau of Yards and Docks, Navy Dept., 1526 Seventeenth St., N. W., Washington, D. C.		Jan. 19, 1920

ASSOCIATE MEMBERS (*Continued*)

		Date of Membership.
KING, TAO. Res. Member, Comm. on Railway Technics, Ministry of Communications, 33 Tou Fa Hutung, West City, Peking, China	Jun. Assoc. M.	May 28, 1912 Nov. 25, 1919
MACARTNEY, THOMAS WAKEFIELD. County Drainage Engr., Yakima County, Yakima, Wash		Jan. 19, 1920
MACSHEFFRAY, FRANK ALBERT. Works Engr., Fred T. Ley & Co., Inc., 857 Commonwealth Ave., Boston, Mass.		Sept. 9, 1919
MCFERRON, CLARENCE WILLIAM. Chf. Engr., Shell Creek Project of Sand Springs Home, Box 411 (Res., 803 South Quaker), Tulsa, Okla		Jan. 19, 1920
MAIL, EUGENE FREDERICK. City Engr., Robinson, Ill	Jun. Assoc. M.	Mar. 4, 1913 Jan. 19, 1920
MARTIN, JAMES MCQUEEN. Highway Engr., Williamsburg County, Kingstree, S. C		Jan. 19, 1920
NOETZLI, ALFRED ADOLPH. Chf. Engr., Hydro-Elec. Power Developments, Beckman & Linden Eng. Corporation, 415 Balboa Bldg., San Francisco, Cal		Nov. 25, 1919
PARTRIDGE, JOHN FREDERICK. 3455 Pacific Ave., San Francisco, Cal	Jun. Assoc. M.	Feb. 4, 1913 Jan. 19, 1920
PERKINS, ROSCOE, JR. Cornwells Heights, Pa	Jun. Assoc. M.	Mar. 12, 1918 Jan. 19, 1920
PILLSBURY, ARTHUR CLIFTON. 312 Los Angeles Investment Bldg., Los Angeles, Cal		Jan. 19, 1920
REASONER, RICHARD BARKLEY. Div. Engr., Ore. Short Line R. R., Utah Div., O. S. L. Depot, Pocatello, Idaho		Jan. 19, 1920
WARNECKE, WILLIAM HENRY. Capt., Engrs., U. S. A., Engineer School, Camp A. A. Humphreys, Va		Jan. 19, 1920
WHIPPLE, JOHN BLAINE. Asst. Engr., Dept. of Highways, State of New York, 60 Beacon St., Newburgh, N. Y.		Nov. 25, 1919
WHITE, JOHN ALOYSIUS. Engr., Constr. Dept., International Motors Co., 849 North 5th St., Allentown, Pa.		Oct. 14, 1919
WINN, THOMAS EARLE, JR. Box 81, Quincy, Fla		Jan. 19, 1920

JUNIORS

ALVAREZ DE URRUTIA, ARMANDO MANUEL. Eng. Draftsman, The Snare & Triest Co., 561 Cerro St., Havana, Cuba.	Jan. 19, 1920
BUTLER, ALBAN FRANCIS. 256 Kelton Ave., Columbus, Ohio.	Sept. 9, 1919
HSIEH, ERNEST SHENGTSU. 520 Myburch Rd., Shanghai, China	Sept. 9, 1919
MCCLELLAND, GEORGE W. 4124 Warwick Boulevard, Kansas City, Mo	April 14, 1919
WATSON, LEON HEATHMAN. Box 475, Ponca City, Okla	Nov. 25, 1919

REINSTATEMENTS

MEMBERS	Date of Reinstatement.
FENN, ROBERT WILLSON	Feb. 10, 1920

RESIGNATIONS

MEMBERS	Date of Resignation.
HARRISON, CHRISTOPHER	Dec. 31, 1919
ASSOCIATE MEMBERS	
BLAYLOCK, JOHN CHARLES	Dec. 31, 1919
DAVIS, ROBERT MENEES	Dec. 31, 1919

DEATHS

FORD, THEODORE BOYDEN. Elected Member, December 6th, 1905; died Feb. 2d, 1920.

GREGORY, CHARLES EMERSON. Elected Junior October 6th, 1896; Associate Member, March 6th, 1901; Member, June 19th, 1918; died February 21st, 1920.

LOOMIS, THOMAS HOOKER. Elected Member, January 7th, 1903; died February 11th, 1920.

LUPFER, ALEXANDER MCCLURE. Elected Member, November 1st, 1905; died February 3d, 1920.

MORRILL, GEORGE SULLIVAN. Elected Member, March 2d, 1887; died February 9th, 1920.

PALMER, RAY ROLPH. Elected Associate Member, October 10th, 1916; died December 25th, 1919.

PRATT, ROBERT WINTHROP. Elected Member, June 6th, 1911; died February 2d, 1920.

SMITH, EDWIN FOSTER. Elected Member, June 5th, 1895; died January 26th, 1920.

THOMPSON, SAMUEL CLARENCE. Elected Member, February 6th, 1889; died February 28th, 1920.

WRIGHT, WILLIS BENTON. Elected Member, November 3d, 1897; died November 16th, 1919.

Total Membership of the Society, March 4th, 1920, 9 381

MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST

(February 1st to March 1st, 1920)

NOTE.—*This list is published for the purpose of placing before the members of this Society the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.*

LIST OF PUBLICATIONS

In the subjoined list of articles, references are given by the number prefixed to each journal in this list:

(2) *Journal*, Engrs. Club of Phila., Philadelphia, Pa.
(3) *Journal*, Franklin Inst., Philadelphia, Pa., 50c.
(4) *Journal*, Western Soc. of Engrs., Chicago, Ill., 50c.
(5) *Journal*, Eng. Inst. of Canada, Montreal, Que., Canada.
(6) *Journal*, Am. Inst. of Archts., Washington, D. C., 50c.
(7) *Gesundheits Ingenieur*, Munich, Germany.
(8) *Stevens Indicator*, Hoboken, N. J., 50c.
(9) *Industrial Management*, New York City, 25c.
(11) *Engineering* (London), W. H. Wiley, 432 Fourth Ave., New York City, 25c.
(12) *The Engineer* (London), International News Co., New York City, 35c.
(13) *Engineering News-Record*, New York City, 15c.
(15) *Railway Age*, New York City, 15c.
(16) *Engineering and Mining Journal*, New York City, 15c.
(17) *Electric Railway Journal*, New York City, 10c.
(18) *Railway Review*, Chicago, Ill., 15c.
(19) *Scientific American Monthly*, New York City, 10c.
(20) *Iron Age*, New York City, 20c.
(21) *Railway Engineer*, London, England, 1s. 2d.
(22) *Iron and Coal Trades Review*, London, England, 6d.
(24) *American Gas Engineering Journal*, New York City, 10c.
(25) *Railway Mechanical Engineer*, New York City, 20c.
(26) *Electrical Review*, London, England, 4d.
(27) *Electrical World*, New York City, 10c.
(28) *Journal*, New England Water-Works Assoc., Boston, Mass., $1.
(29) *Journal*, Royal Soc. of Arts, London, England, 6d.
(32) *Mémoires et Compte Rendu des Travaux*, Soc. Ing. Civ. de France, Paris, France.
(33) *Le Génie Civil*, Paris, France, 1 fr.
(36) *Cornell Civil Engineer*, Ithaca, N. Y.
(40) *Zentralblatt der Bauverwaltung*, Berlin, Germany, 60 pfg.
(41) *Elektrotechnische Zeitschrift*, Berlin, Germany.
(42) *Journal*, Am. Inst. Elec. Engrs., New York City, $1.
(43) *Annales des Ponts et Chaussées*, Paris, France.
(45) *Coal Age*, New York City, 15c.
(46) *Scientific American*, New York City, 15c.
(47) *Mechanical Engineer*, Manchester, England, 3d.
(48) *Zeitschrift*, Verein Deutscher Ingenieure, Berlin, Germany, 1, 60 m.
(49) *Zeitschrift für Bauwesen*, Berlin, Germany.
(50) *Stahl und Eisen*, Düsseldorf, Germany.
(53) *Zeitschrift*, Oesterreichischer Ingenieur und Architekten-Verein, Vienna, Austria, 70h.
(54) *Transactions*, Am. Soc. C. E., New York City, $16.
(55) *Mechanical Engineering*: Journal, Am. Soc. M. E., New York City, 35c.
(56) *Transactions*, Am. Inst. Min. and Metallurgical Engrs., New York City, $6.
(57) *Colliery Guardian*, London, England, 5d.
(58) *Proceedings*, Engrs.' Soc. of W. Pa., 2511 Oliver Bldg., Pittsburgh, Pa., 50c.
(59) *Proceedings*, American Water Works Assoc., Troy, N. Y.
(60) *Municipal and County Engineering*, Indianapolis, Ind., 25c.
(61) *Proceedings*, Western Railway Club, 225 Dearborn St., Chicago, Ill., 25c.
(62) *American Drop Forger*, Thaw Bldg., Pittsburgh, Pa., 10c.
(63) *Minutes of Proceedings*, Inst. C. E., London, England.
(64) *Power*, New York City, 10c.
(65) *Official Proceedings*, New York Railroad Club, Brooklyn, N. Y., 15c.
(66) *Gas Journal*, London, England, 6d.
(67) *Cement and Engineering News*, Chicago, Ill., 25c.
(69) *Eisenbau*, Leipzig, Germany.

(71) *Journal*, Iron and Steel Inst., London, England.
(71a) *Carnegie Scholarship Memoirs*, Iron and Steel Inst., London, England.
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